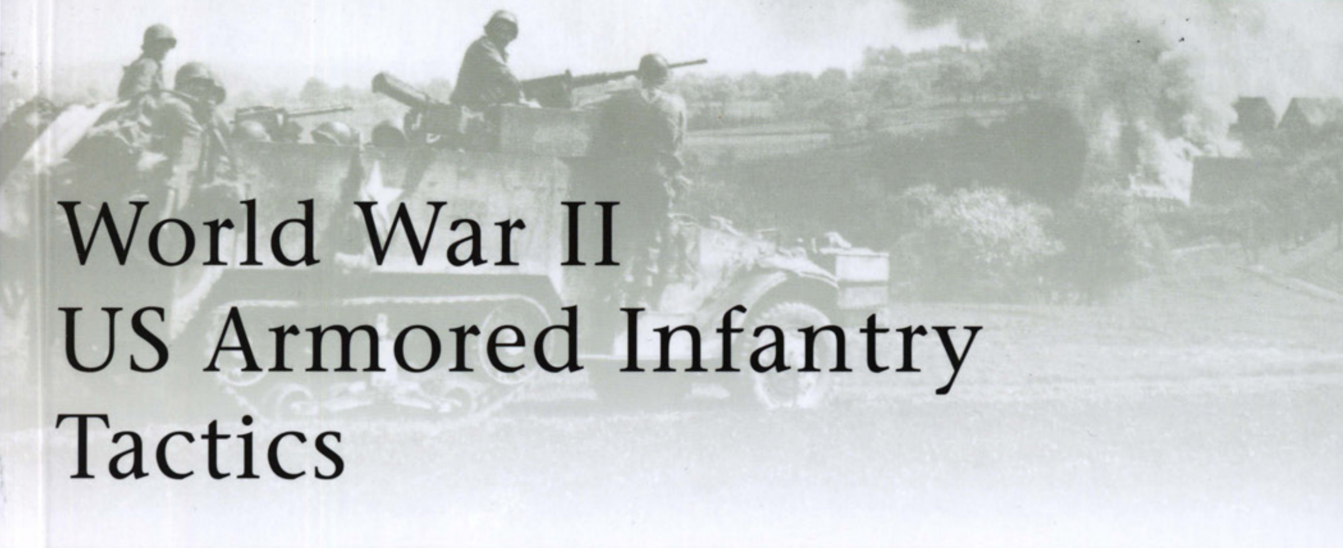
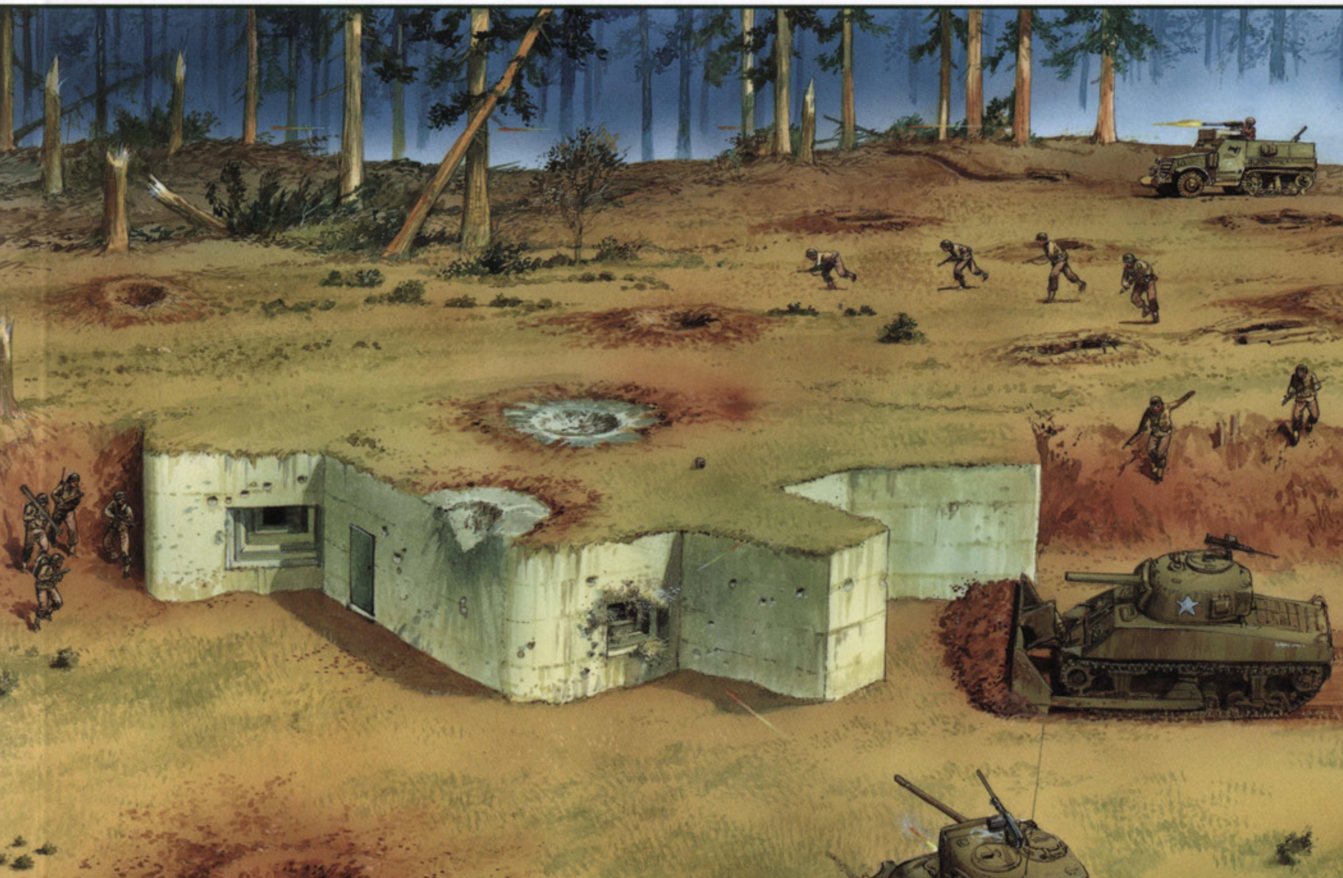


World War II US Armored Infantry Tactics



GORDON L ROTTMAN

ILLUSTRATED BY PETER DENNIS

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World War II US Armored Infantry Tactics

GORDON L ROTTMAN

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ABBREVIATIONS

AAA	antiaircraft artillery
Abn Div	airborne division
AFA	armored field artillery
AIB	armored infantry battalion
AIR	armored infantry regiment
AP	armor-piercing
Armd Div	Armored Division
AT	antitank
CC	Combat Command
CCA, CCB, CCC	Combat Commands A, B, and C (aka CCR)
CCR	Combat Command Reserve
GHQ	General Headquarters
HE	high-explosive
HHC	Headquarters and Headquarters Company
HMG	heavy machine gun
HQ	headquarters
Inf Div	Infantry Division
LMG	light machine gun
MG	machine gun
NCO	non-commissioned officer
OVE	on-vehicle equipment
RC	Reserve Command
SMG	submachine gun
SOP	standard operating procedures
SP/SPM	self-propelled/ mount
TD	tank destroyer
TF	Task Force

LINEAR MEASUREMENTS

Distances, ranges, and dimensions are given in the contemporary US system of inches, feet, yards, and statute miles rather than metric. To covert these figures to metric the following conversion formulas are provided:

feet to meters	multiply feet by 0.3058
yards to meters	multiply yards by 0.9114
miles to kilometers	multiply miles by 1.6093

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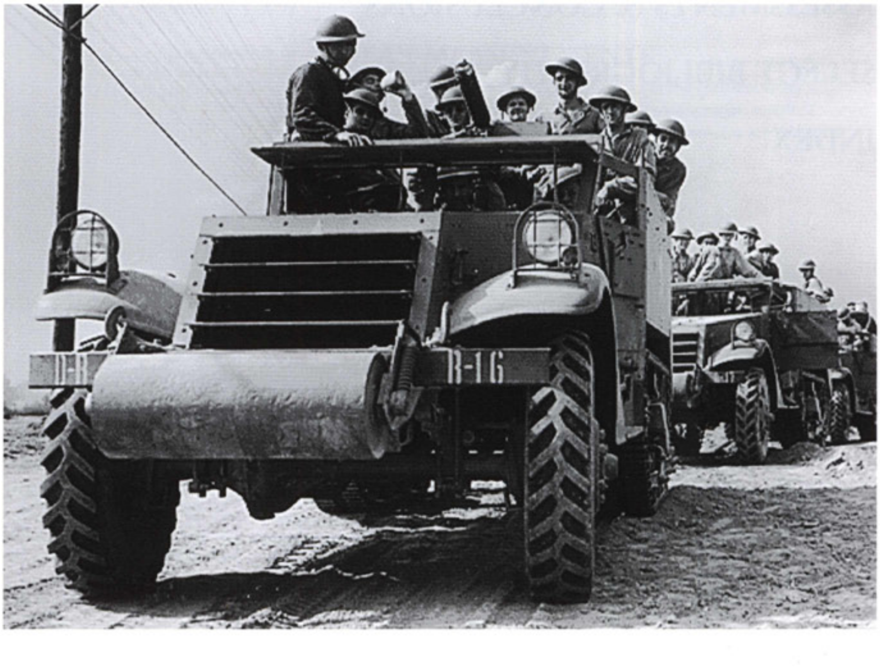
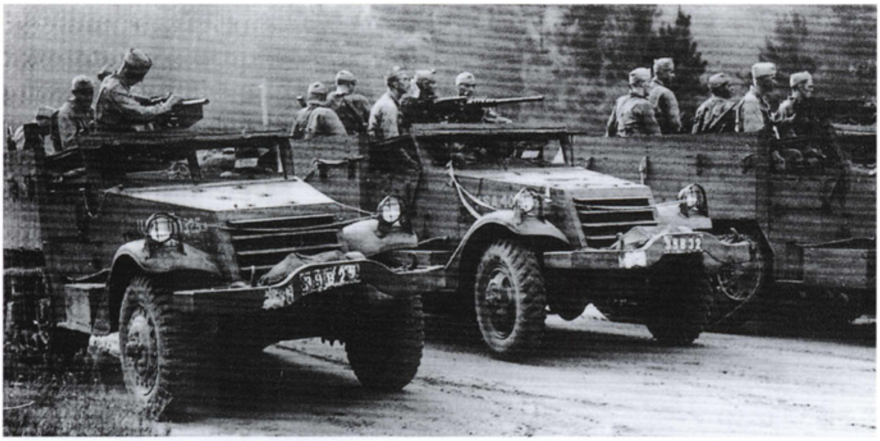
WORLD WAR II US ARMORED INFANTRY TACTICS

INTRODUCTION

In the years following the moderately effective appearance of tanks on the battlefields of the Great War there was a great deal of debate in regards their future roles and employment, giving rise to two basic schools of thought on armor tactics. One saw tanks only as slow-moving gun platforms providing direct support to the infantry: in effect, simply machine gun-destroyers and obstacle-breachers. The more dynamic school envisioned highly mobile independent attack forces with their own artillery, engineers, logistical support, and (oh, yes...) some infantry. Armor was the cavalry's replacement, intended to slice through enemy lines and strike deep in the rear to destroy and disrupt command posts, reserves, artillery, and logistics. In reality, both capabilities are necessary – tanks supporting infantry, and independent combined-arms armor forces – but regardless of the tanks' role, infantry is a critical necessity for the successful employment of armor, as are all other arms and services.



Pre-war M3 halftracks of a rifle platoon line up for maneuvers. Bumper markings were not standardized at this time, but were usually yellow; these vehicles belongs to the 7th Cavalry Brigade (Mechanized). A .30cal M1917A1 water-cooled machine gun can be seen pointing skyward on the lead halftrack.

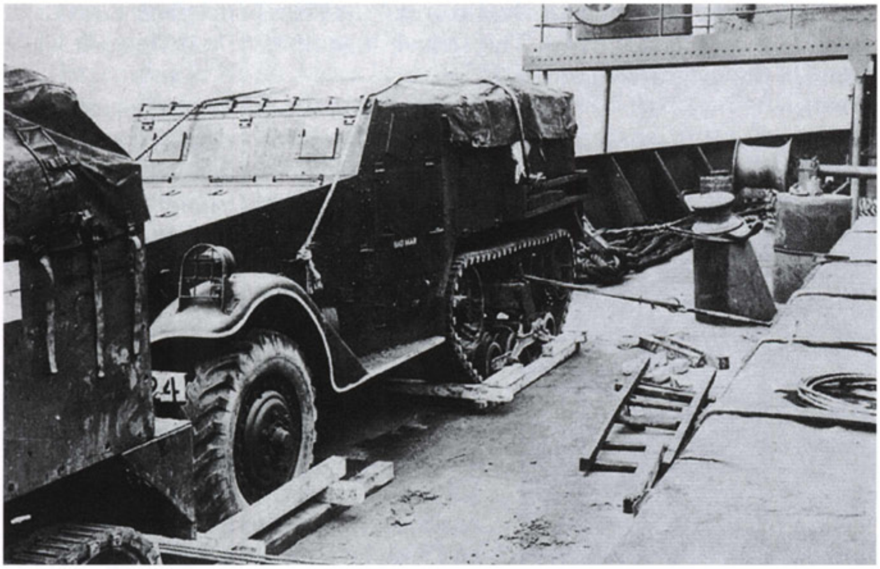


Three pre-war M3 halftracks with winches in place of the bumper-mounted roller. Typically only the company maintenance section had a halftrack with a winch, but in practice they were issued irregularly and any number might be found in a unit. All three vehicles mount .50cal M2 machine guns.

Most armor-force prophets accepted the need for some infantry, but the question was how to transport them, and how exactly should they be employed? For the most part these visionaries seriously underestimated the ratio of infantry necessary to support tanks. Tankers viewed infantry just as infantrymen viewed tanks – as essentially a support for their own arm – and the necessity for the complete integration of units of all branches for effective combined-arms operations was far from understood.

* * *

The integration of infantry and armor had a slow start. The first such effort was in 1929 when Company H, 34th Infantry was motorized with 1½-ton six-wheel trucks and was made part of the fledgling Mechanized Force, a hodge-podge of small tank, armored car, artillery, and support units. This "Gasoline Brigade" did not "belong" to a particular branch; an effort was made to place it in the cavalry, since it was viewed as an extension of the cavalry's mobility and shock power, though many felt that the resulting branch jealousies would be counterproductive to the Force's development. Regardless, Army Chief of Staff Gen Douglas MacArthur disbanded the Force



An M3 halftrack secured by rope and chocked in place aboard a transport for overseas movement. The canvas top cover is in place, but without the bows that would raise it about a foot higher.

An M3 halftrack rolls through an Algerian town. The American flag adorned the sides of halftracks in North Africa as a means of friend-or-foe recognition.

and turned its assets over to the cavalry, with the infantry company, engineers, and artillery reverting to their own branches' control. A new unit was created in 1933, 1st Cavalry Regiment (Mechanized); this was not a combined-arms unit, but purely cavalry. In the meantime the infantry demanded its own tank capability simply as support for infantrymen on foot; the Infantry Tank School had been created, and the existing 1st Tank Regt became the 66th Infantry Regt (Light Tank).

In 1938 the 7th Cavalry Brigade (Mechanized) was activated, with the 1st and 13th Cavalry Regts; this relied on combat cars (light tanks) and armored cars for combat power, with some artillery but no infantry. In 1940 the infantry consolidated its tanks into the Provisional Tank Bde, strictly a holding unit for tanks. During that year's Louisiana Maneuvers the two brigades were formed into an *ad hoc* tank division; the value of these units was recognized, and after the success of the German Panzers in Europe it was realized that combined-arms armored divisions were essential, with halftrack-borne infantry assigned to the new formations. The 7th Cavalry Bde became the 1st Armored Division, and the Provisional Tank Bde the 2d Armd Div on July 15, 1940. The arrival of equipment was sluggish while America slowly geared up for war.

In 1941–42 the Army planned to organize five motorized infantry divisions; each would be fielded alongside two armored divisions, the three comprising an armored corps. They were to be organized along the lines of a standard infantry division, but the infantry regiments would be provided sufficient trucks to make them completely mobile. There would also be significantly increased maintenance assets, and a reconnaissance squadron rather than a troop. The original test division – 4th Inf Div – was partly equipped with halftracks, but these were withdrawn. The 6th–8th and 90th Inf Divs were also reorganized as

U.S.A. 4010947-S
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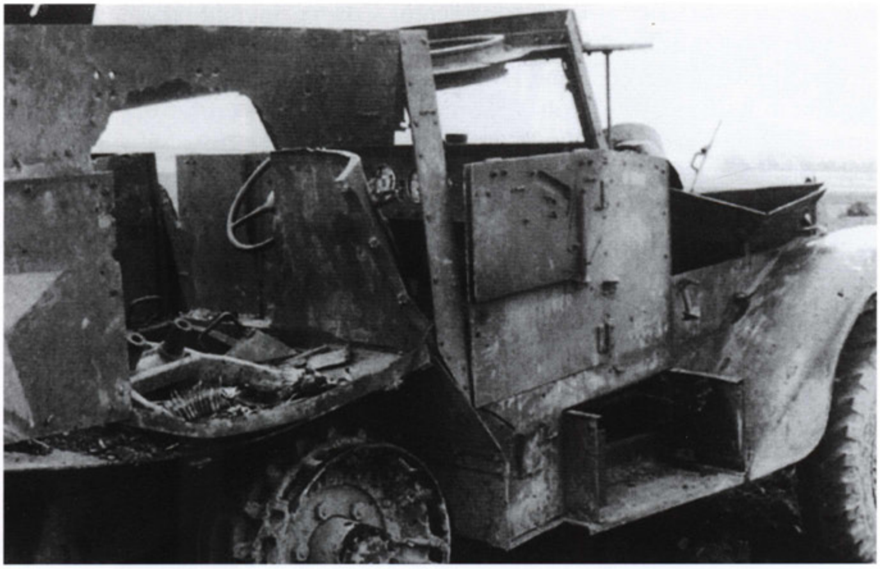
Rows of M3 halftracks stored in Britain and waiting issue to deploying units. All have bumper winches. Note the soil spread on the white star marking on the hood, to make it less noticeable to aircraft.



The effects of antitank gun fire on an M2 halftrack car; the contents of the ammunition storage compartment had detonated and caused the entire vehicle to burn. The 3.7cm Pak 35/36 AT gun – nicknamed the *Türklopfer* (Doorknocker) by German soldiers, as it was ineffective against most tanks – was still deadly to lightly armored American halftracks.

motorized, but did not receive additional trucks. In early 1943 these divisions were converted back to standard infantry; they required too many vehicles and too much shipping space, fuel, and tires. The 4th Mot Div was to be "armorized," with halftrack-equipped armored infantry regiments and full-tracked self-propelled artillery. The 4th required more shipping space than an armored division; rejected by theater commanders, it was converted to standard infantry.

The Armored Force was established on July 10, 1940 at Ft Knox, Kentucky to conduct service tests for armored units and oversee their organization and training. It was redesignated the Armored Command on July 2, 1943, with a lessening of its control of the armored divisions, and at the same time the armored corps were redesignated army corps.[1] It was redesignated yet again, as the Armored Center, on February 20, 1944, becoming essentially a replacement training organization. Even though armored infantry units were components of armored divisions, most of their tables of organization, doctrine, organization, and training standards were the responsibility of the Chief of Infantry at Ft Benning, Georgia.

The fighting in North Africa in early 1943 identified many flaws in armor doctrine, tactics, organization, and equipment. The US Army suffered greatly from branch parochialism, and the cost of such self-centeredness was learned the hard way in combat; in the early days the situation actually worsened, and co-operation between armor and infantry was extremely poor. Separate tank battalions supported infantry divisions, but often infantry commanders did not include tank unit officers in their staff meetings. Even the units of the 1st Armd Div were frittered away in support of infantry. Far from combat welding them into a team, the distrust between tankers and infantrymen actually intensified. Fortunately, many of these issues had been resolved by the time of the invasion of continental Europe in mid 1944, with the recognition of the need for increased tank–infantry training and coordination.

---

[1] Armored corps were redesignated standard army corps on October 10, 1943 before deploying overseas: II Armd Corps became XVIII Corps, III became XIX Corps, and IV became XX Corps. I Armd Corps was inactivated in Tunisia and its assets became Seventh Army on July 10, 1943. The Army planned for 61 armored divisions in 1941, reduced this to 47 along with 23 armor corps in 1942, then to 26, then 20. In practice only 16 armored divisions were organized.

Only the 1st and 2d Armd Divs fought in North Africa; the 1st went on to fight in Italy and the 2d on Sicily and then in Northwest Europe. All other armored divisions (3d–14th, 16th, 20th) served in Northwest and Central Europe. (The 16th and 20th saw only one and two weeks' combat, respectively, in the war's final days.)

* * *

This study is devoted to the armored infantry battalions and regiments organic to armored divisions and supplying their infantry component. They were not simply standard infantry units riding halftracks, but were uniquely organized, armed, and equipped. The actions of armored divisions are much studied, but often the tanks are highlighted at the expense of the armored infantry that provided half of the divisions' maneuver battalions. One reason for this inequity is that the armored infantry seldom fought from their halftracks, most often fighting on foot alongside Sherman tanks.

ORGANIZATION

The armored division[2]

The 1940 armored division, which never saw combat, was a tank-heavy force with a cumbersome command arrangement. It consisted of an armored brigade with one two-battalion medium and two three-battalion light armored regiments, and a battalion-sized artillery "regiment" with only 24 howitzers instead of 36. A two-battalion "infantry regiment (armored)" was assigned to the division, seemingly almost as an afterthought. There was also a three-battery artillery battalion to support the infantry regiment, but with only four truck-drawn 105mm howitzers per battery plus a battery of eight 75mm antitank guns. Divisional units included engineer, ordnance maintenance, quartermaster supply, and medical battalions; a signal company; and a battalion-sized reconnaissance squadron with a light tank, an armored rifle, and two reconnaissance companies. The division possessed 381 tanks, 148 halftracks, and 97 scout cars, with 12,697 troops.

This ratio of only two infantry battalions to eight of tanks was entirely inadequate. Counting assets in the reconnaissance squadron, there were 25 tank companies (six medium, 19 light) to only seven rifle companies. The division could not secure the ground it took, provide flank and rear security, mop up, and prepare the ground for defense, much less hold it. Only the 1st and 2d Armd Divs were organized under this excessively unbalanced structure.

In March 1942 the armored division was streamlined to improve command and control and increase the ratio of infantry to tanks. The burdensome brigade echelon was eliminated, along with one armored regiment; there were now two armored regiments, each with one light and two medium battalions. The armored infantry regiment was expanded to three battalions, and there were now three armored field artillery (AFA) battalions, each with three six-tube self-propelled 105mm howitzer batteries. Command

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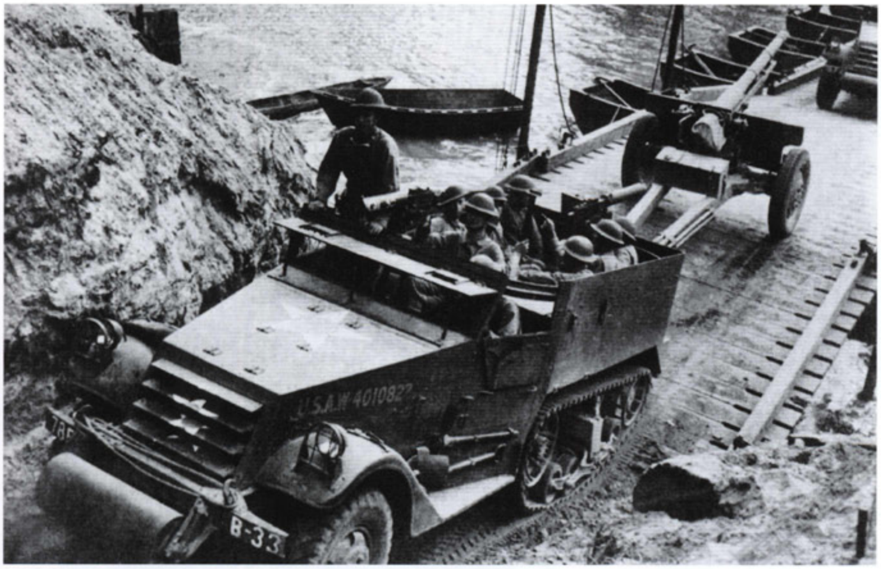
[2] See also Osprey Battle Orders 3: *US Armored Divisions: The European Theater of Operations, 1944–45.*

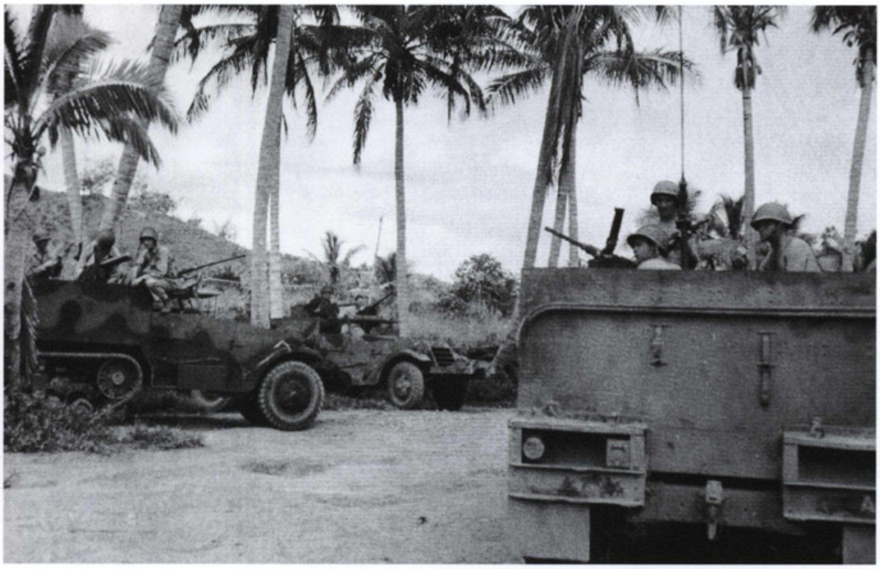


During the Louisiana Maneuvers, an M2 halftrack car of 78th Field Artillery Bn comes off a pontoon bridge. Mainly used as a prime-mover, this one tows a 75mm M1897A2 field gun, which was the standard divisional artillery piece until it began to be replaced by the 105mm M2A1 howitzer in 1940. The 78th FA Bn later became an armored field artillery (AFA) battalion of the 2d Armored Division.

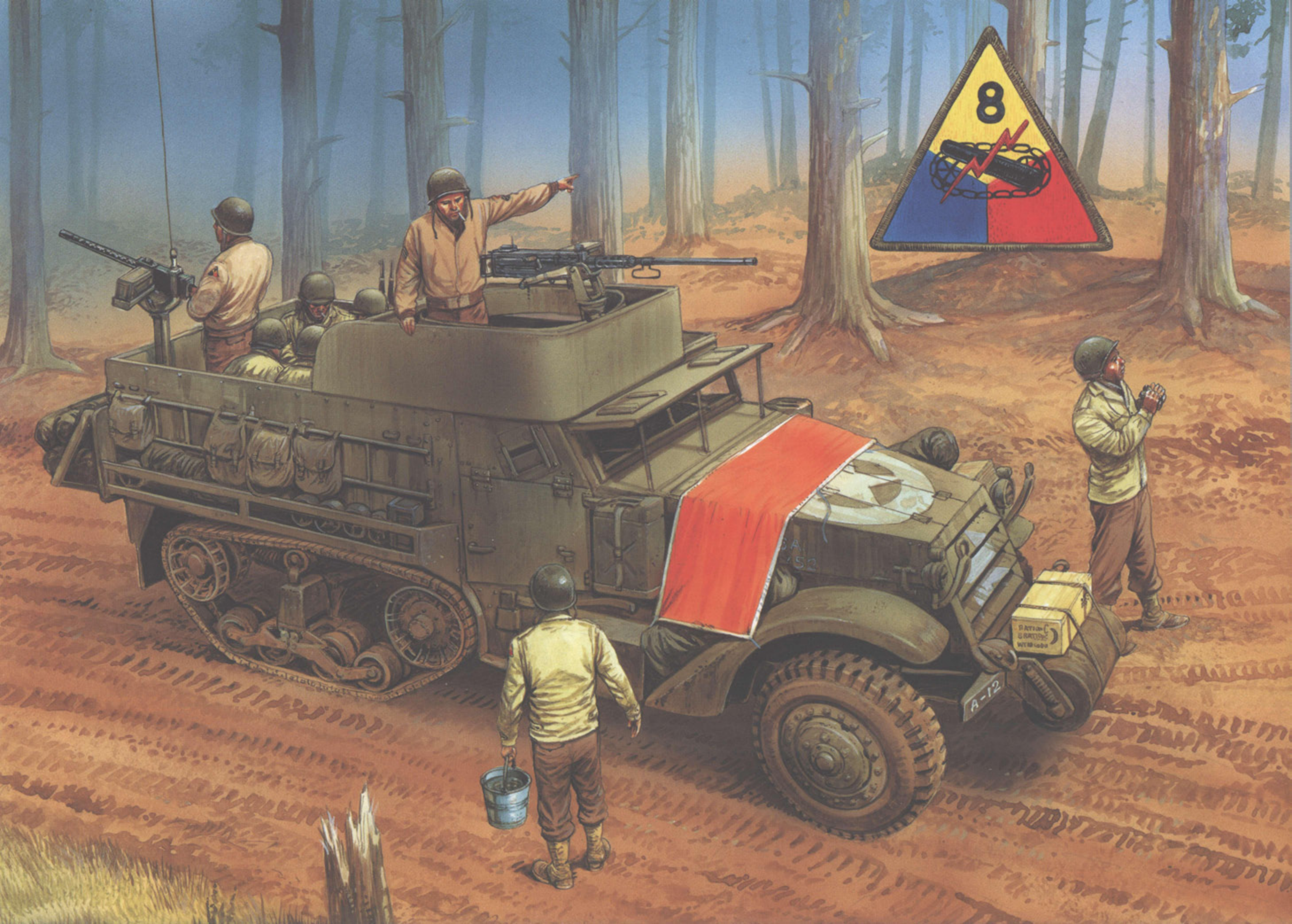
and control elements were part of the division headquarters: division headquarters, armored signal and service companies, headquarters of the division artillery command, and two small combat command headquarters and headquarters detachments. The two CCs could control any mix of tank, armored infantry, and armored artillery units plus other supporting elements.

While the ratio of infantry to armor had improved it was still not enough. There were now 19 tank companies (12 medium, seven light) and nine armored rifle companies. There were 390 tanks (an increase), 694 halftracks, 40 scout cars, and 14,630 men. Reconnaissance capabilities had been improved; the reconnaissance battalion now had three companies plus one of light tanks, having lost its rifle company, and each armored regiment now had a reconnaissance company.

Further improvements were implemented in September 1943. (The new organization was much influenced by the new Panzer division, with its



M3 halftracks of 6th Armd Inf Regt, 1st Armd Div halt in a desert oasis in Tunisia; note the brown-on-olive drab camouflage pattern. The 6th AIR was the first armored infantry unit to see action.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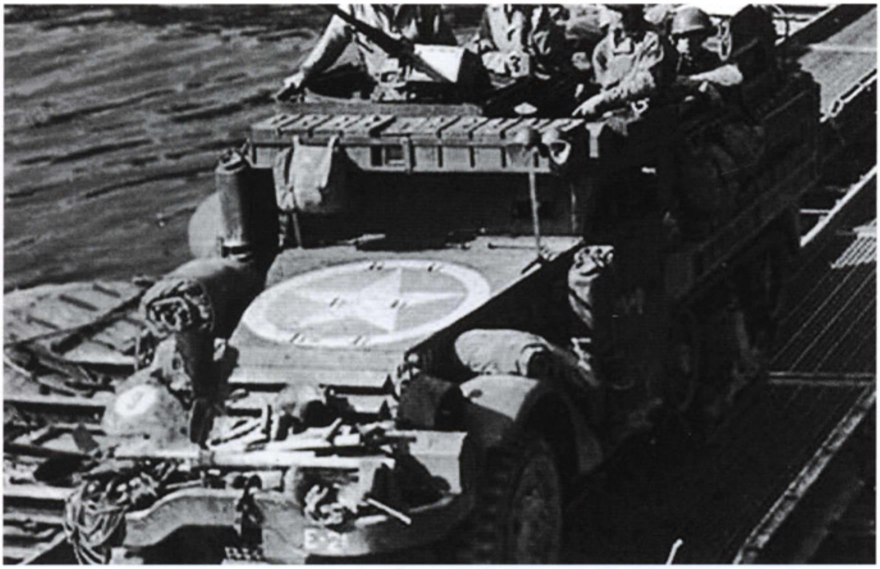


This unit has added a rack over the windshield for 10× .50cal ammunition cans. Note the musette bag slung on the rack. Since the bumper number shows that this M3A1 belongs to Company E, it is assigned to the 2d Bn of either 36th or 41st AIR, in 3d or 2d Armd Div, respectively.

streamlined command and control and utilization of smaller mission-oriented task forces; the British were also using smaller, more controllable armored divisions.) The revisions reduced the division's strength by almost 4,000 troops to 10,937, with 263 tanks, 501 halftracks, and 54 armored cars. Divisions in the States reorganized between September and November 1943. The overseas 1st, 2d, and 3d Armd Divs retained the 1942 structure of one armored infantry and two tank regiments; they were referred to as "heavy" divisions and the others as "light." The 1st was converted to a light division in Italy in June-July 1944. The 2d and 3d retained the heavy structure through the war; the Commanding General, European Theater of Operations, a proponent of the old heavy structure, declared that there was no time to reorganize the divisions due to ongoing operations.

The 1943 light division reorganization saw the tank and infantry regimental echelons eliminated altogether; there were now three battalions each of tank, armored infantry, and armored field artillery. The three tank

A THE ARMORED INFANTRY'S MOUNT

This M3A2 halftrack passenger carrier mounts a .50cal M2 machine gun on an M49 mount forward, and a .30cal M1919A4 in the rear. The style and colors of nationality and unit identification, bumper numbers, and other markings varied over time and between units. Normally the right bumper marking identified the division and battalion, e.g. "8Δ49" for the 8th Armd Div's 49th AIB. The left bumper bore company and vehicle identification, e.g. "A-12." Halftracks of the HHC bore "HQ-number," and of the Service Co, "SVC-number." Tie-down fluorescent AL-140 air-to-ground signal panels (30.5in wide by 12ft long), intended for spelling out codes, were used for recognition. They were available in orange (as here), dark blue, cerise-red, and yellow, all with a white reverse.

The vehicle is festooned with the rifle squad's personal equipment, C-ration boxes, and other gear. Rather than backpacks armored infantrymen were issued musette bags, a haversack carried by a shoulder strap. When dismounted they traveled light, leaving most of their gear in the halftrack – usually including even their cartridge belt and canteen – and carrying ammunition in their pockets. They were uniformed no differently than other infantrymen, but were often seen wearing tanker's jackets rather than field jackets, and they sometimes wore mechanic's coveralls as opposed to fatigues or wool field uniforms.

On their left shoulder they displayed the triangular armored division patch (**inset**), in gold-yellow, blue, and red, signifying the merger of cavalry, infantry, and artillery. (When out of the line, most soldiers wore their garrison caps cocked to the right, but armored infantrymen canted them to the left – an unofficial practice.)

While the mainstay of the tank battalions was the M4 Sherman medium, the M5 Stuart light tank (left) played a valuable role in reconnaissance and security missions. Note the logs and sandbags attached for additional protection.

battalions were mixed, with one light and three medium companies (a reduction of 127 tanks); additional GHQ separate tank battalions could be attached to infantry divisions. The division now had 13 tank companies (nine medium, four light) and nine armored infantry companies – still not quite enough ground-pounders. With the loss of the tank regiments' former reconnaissance companies, the cavalry reconnaissance squadron – a battalion-sized unit – now had four company-sized reconnaissance troops, an assault gun troop, and a light tank company. Armored divisions normally had an antiaircraft artillery automatic weapons battalion attached, along with at least one tank destroyer battalion, sometimes up to three. In rare instances a GHQ tank battalion was attached. To make up for the division's deficiency in medium artillery, corps artillery often placed a 155mm towed howitzer battalion in direct support.[3]

Combat Commands

The concept of two combat commands provided a great deal of flexibility. Any number and mix of tank, armored infantry, AFA, and TD battalions and companies were attached, along with a reconnaissance troop, an engineer company, and other elements as necessary. The CCA HHC was commanded by a brigadier-general (there was no assistant division commander) and CCB by a colonel; these were roughly 100-man maneuver headquarters with no administrative or logistical responsibilities. The new reserve command (RC) was only an eight-man HQ (with another nine support personnel attached from the division HHC's transportation platoon); it was commanded by an infantry colonel who was also responsible for overseeing the AIBs' infantry training. The RC was not a "balanced maneuver task force," but merely a minimal HQ controlling units rotated to the rear for maintenance, resupply, and rest.

The concept of three maneuver units was just as viable for armored divisions as infantry, and many "light" armored divisions increased the RC

---

[3] The AAA Bn had four batteries each with 8× M13/M14 twin or M16/M17 quad .50cal SP machine guns, and 8× M1 towed 40mm AA guns. The TD Bn had three companies each of 12× M10, M18, or M36 tank destroyers and 8× M20 armored utility cars, and a reconnaissance company with 6× M8 armored and 3× M20 armored utility cars and 12× MG-armed jeeps. See also Osprey BTO 10: *US Tank and Tank Destroyer Battalions in the ETO 1944–45*.

While each armored infantry battalion was authorized an M32 tank recovery vehicle (on an M4 tank chassis), many battalions had this M31 TRV (on an M3 medium tank chassis). The 75mm and 37mm "guns" are actually dummies; the M31's only armament was two .30cal machine guns. If a tank was disabled then – situation permitting – the crew and some of the accompanying armored infantry would remain with it until it could be recovered. Crews of disabled tanks were to continue to provide fire support for as long as possible, and MGs could be dismounted for ground firing.

headquarters strength with its own HHC and employed it as a third maneuver force, referring to it as CCR. In two instances armored group HHCs provided the CCR: the 10th Armored Group with the 8th Armd Div, and the 12th Armored Group with the 9th. The "heavy divisions," irrespective of possessing three regimental headquarters, had CCA and CCB headquarters and headquarters detachments, and sometimes the AIR headquarters doubled as a CCC. Divisions employing three CCs usually "permanently assigned" an AIB and tank battalion to each. (The 12th Armd Div's CC assignments provide an example: CCA – 66th AIB & 43d Tank Bn; CCB – 17th AIB & 14th Tank Bn; CCR – 56th AIB & 23d Tank Bn.) Reconnaissance and engineer companies and other support elements were attached as necessary, but the same units might not be habitually attached. Artillery battalions were seldom attached but this sometimes occurred; they generally remained under division control, although they would support a specific CC.

There were three ways a CC could task-organize its units; practices varied between divisions, and were specified in standard operating procedures (SOP). Some divisions virtually merged the AIB and tank battalion into a single unit, pairing off the subunits at all echelons – a rifle and a tank company, a rifle platoon with a tank platoon, and in extreme cases a squad with an individual tank or tank section. This was an effective but extremely rigid structure, and once implemented and practiced for a while it became difficult to re-allocate subunits when, for example, an infantry-heavy task force was needed. This system is said to have been conceived by MajGen Lunsford E. Oliver, commander of the 5th Armd Div, who as a CC commander with the 1st Armd Div in North Africa had seen the value of solid mutual support between tankers and infantrymen. He required the "married" units not only to train and fight together, but to live and mess together whether in the field or quarters. A 1947 Armored School study of World War II armored infantry and tank task organization recommended:

> Whenever possible it was found best to join up the same tank and infantry units together in training and combat. Not only would the staff sections function better but lower unit commanders and

> individual tank crews and infantry squads became acquainted and gained confidence in each other. Units gained objectives as a team and not individual arms. To round out this team artillery forward observers were attached down to include tank and infantry companies from the field artillery battalion in direct support of the unit. This gave a well-rounded team of tanks, infantry and artillery. The artillery forward observer operated dismounted with the infantry and the observer with the tanks rode in a tank. Whenever possible the same artillery battalions were kept in direct support of the same units.

More often, the AIB and tank battalion operated as two task forces with companies cross-attached between them. Cross-attached units often changed as the mission progressed; there were times when infantrymen did not know what tank unit they were working with, but that was actually not as grave as it sounds – the commanders and staff knew what unit they were with, and even though units might be switched they most likely had previously worked together. TFs were either numbered (TF 1, TF 2), carried the battalion number (TF 15, TF 68), or bore the name of the commander; see Tables 1 and 2 for examples.

Table 1: Combat Command A, 12th Armd Div; December 29, 1944

TF 1	TF 2	CCA Troops
43 Tank Bn (–)	66 AIB (–)	HHC, CCA
B-66 AIB	C-43 Tank Bn	493 AFA Bn (–)
D-66 AIB*	D-43 Tank Bn (–)	A-82 Med Bn
A-493 AFA Bn	B-493 AFA Bn	A-134 Ord Bn
2-D-43 Tank Bn		C-572 AAA Bn
		1-A-119 Engr Bn

* 12th Armd Div AIBs were unique in that they received a fourth rifle company in March 1945, manned by Colored troops.

Table 2: Combat Command B, 5th Armd Div

TF Anderson	TF Wintermute
HHC, 81 Tank Bn	HHC, 15 AIB
B & C, 81 Tank Bn	A, 15 AIB
B & C,15 AIB	A, 81 Tank Bn
Svc Co, 81 Tank Bn	Svc Co,15th AIB

Table 3: Habitual CC assignments, 5th Armd Div

CCA	CCB	CCR
34 Tank Bn	81 Tank Bn	10 Tank Bn
46 AIB	15 AIB	47 AIB
47 AFA Bn	71 AFA Bn	95 AFA Bn
A, 22 Engr Bn	B, 22 Engr Bn	C, 22 Engr Bn
A, 85 Recon Sqn	B, 85 Recon Sqn	C, 85 Recon Sqn
A, 387 AAA Bn	B, 387 AAA Bn	C, 387 AAA Bn
A, 628 TD Bn	B, 628 TD Bn	C, 628 TD Bn

The 5th Armd Div employed its CCA, CCB, and CCR as co-equal maneuver forces, each with two battalions. The companies cross-attached to form one large and one small task forces named after the battalion commanders, and the companies were married: Co B of the tank battalion with Co B of the AIB, and so on – see Table 2.

Occasionally a CC was divided into three TFs if a third battalion was attached; this was common when the RC simply functioned as a reserve command and not as a maneuver command. Tables 4 and 5 give two examples: as used by CCA, 12th Armd Div with a battalion attached from CCB; and by CCB, 10th Armd Div when attached to the 101st Abn Div at Bastogne – the CCB troops in effect provided a fourth TF, referred to as "teams" by the 10th Armored Division.

There were endless variations in the assignment of units to combat commands. The 4th Armd Div, for example, never assigned units to CCs on a fixed basis, but retained a high degree of flexibility for task

Table 4: CCA, 12th Armd Div; December 7, 1944

TF 1	TF 2	TF 3	CCA Troops
43 Tank Bn (–)	66 AIB (–)	17 AIB	HHC, CCA
B, 66 AIB	B, 43 Tank Bn	C, 43 Tank Bn	D, 43 Tank Bn
A, 92 Recon Sqn (–)	3-A, 92 Recon Sqn	2-A, 92 Recon Sqn	A, 82 Med Bn
1-A, 119 Recon Sqn	2-A, 119 Engr Bn	3-A, 119 Engr Bn	A, 119 Engr Bn (–)
1-B, 92 Recon Sqn			A, 134 Maint Bn
			C, 572 AAA Bn

Table 5: CCB, 10th Armd Div; December 21, 1945

Team Roberts	Team Cherry	Team Desobry	Team O'Hara
HHC, CCB	3 Tank Bn (– B & C)	20 AIB (– A & C)	54 AIB (– A & C)
B, 796th AAA Bn	C, 20 AIB	B, 3 Tank Bn	C, 21 Tank Bn
HQ-C, 55 Engr Bn	3-C, 55 Eng Bn	plt-D, 3 Tank Bn	plt-D, Tank Bn
HQ-D, 90 Recon Sqn	2-D, 90 Recon Sqn	2-C,55 Engr Bn	1-C, 55 Engr Bn
HQ-C, 609 TD Bn	1-C, 609 TD Bn	1-D, 90 Recon Sqn	3-D, 90 Recon Sqn
sec, B-80 Med Bn		2-C-609 TD Bn	3-C-609 TD Bn

organization. A CC might have an AIB, tank battalion, reconnaissance troop, one or two AFA battalions, a battery of 155mm howitzers, AAA battery, tank destroyer company, engineer company, and service elements. These units would be further subdivided into two or three task forces built around an AIB or tank battalion, with any mix of infantry, tanks, and artillery, and controlling its own services.

Armored infantry regiments and battalions

The first armored infantry unit was the 6th Infantry Regiment (Armored), redesignated on July 1, 1940 by converting it from a standard infantry regiment and assigning it to the 1st Armored Division. Fourteen such regiments were organized between 1940 and 1942. On January 1, 1942 the existing five regiments (6th, 36th, 41st, 46th, 51st) were redesignated "armored infantry regiments" (AIR), as were all subsequent regiments; they possessed two battalions until authorized a third that March. They were initially mounted in 1½-ton cargo trucks and White M3A1 scout cars with limited cross-country mobility. The units lacked antitank weapons, under the theory that accompanying tanks would be sufficient. An organizational flaw was that they retained a standard eight-man squad and did not provide drivers and gunners – equating to the horse-holders of old – who remained with the vehicles when squads dismounted.

During June through September 1943 most of the AIRs were broken up into three separate armored infantry battalions, but remained assigned to their parent armored divisions. This was before most of the divisions were committed to combat. The exceptions were the 6th, 36th, and 41st AIRs, which remained as component units of the 1st, 3d, and 2d Armd Divs, respectively. In 1944 the 1st Armd Div was converted to a "light" division and the 6th AIR too was broken up. The AIR was not simply three separate AIBs with a regimental headquarters; the smaller battalions lacked service companies and medical detachments, this support being provided by larger versions of the units under the regiment.

A three-battalion AIR contained 2,680 troops, slightly reduced in 1945. It was organized into a headquarters and headquarters company (HHC), three armored infantry battalions, service company, and medical detachment. The battalions had an HHC and three rifle companies: 1st Battalion, Cos A-C; 2d Bn, Cos D-F; and 3d Bn, Cos G-I. (The strength figures in Table 6 are: officers-warrant officers-enlisted men.)

When the AIRs were broken up the 1st and 2d Bns received new non-sequential designations. There was no discernible pattern in the assignment of battalion numbers other than that the former 1st Bn received the higher of the two new battalion numbers. The AIR HHC, Service Co, and 3d Bn were assigned the lineage and number of the former AIR while the other two battalions continued their former battalion lineages. As an example, the reorganization of the 5th Armd Div's 46th AIR is shown in Table 7; note that the original AIR's 2d Bn also provided assets to the reorganized 85th Cavalry Reconnaissance Squadron. Personnel were shifted between units, to include others within the division, to accommodate the reorganization.

The original 1940 regimental AIBs consisted of a headquarters and headquarters detachment, three rifle companies, and a heavy weapons company, closely paralleling the standard infantry battalion. In the 1942 reorganization the headquarters detachment was expanded to a company, with the disbanded weapons company's elements reassigned to the HHC. The battalion's rear staff echelon, supply, transport, and maintenance elements were assigned to the new service company. The three rifle companies (A–C) also underwent a drastic reorganization – see Table 9.

Table 6: Armored Infantry Regiment, TOE 7-21; March 1, 1942

91-5-2,493 (100-5-2,575 w/medical detachment)	
HQ & HQ Company, TOE 7-22	13-2-123
Regimental Headquarters	9-0-19
Headquarters Company	4-2-104
Company Headquarters	2-1-41
Reconnaissance & Intelligence Platoon	1-0-42
Communication Platoon	1-1-21
Armored Infantry Battalion, TOE 7-25	24-0-676
HQ & HQ Company, TOE 7-26	9-0-157
Company HQ (& Recon Platoon)	2-0-34
Mortar Platoon	1-0-31
Assault Gun Platoon	1-0-32
Machine Gun Platoon	1-0-27
Armored Rifle Company (×3), TOE 7-27	5-0-144
Company Headquarters	2-0-29
Rifle Platoon (×3)	1-0-48
Service Company, TOE 7-23	6-3-142
Company Headquarters	3-0-38
Maintenance Platoon	1-1-60
Transportation Platoon	1-1-30
Personnel Section	1-1-8
Supply Section	0-0-6
Medical Detachment	9-0-72
Headquarters Section	3-0-15
Battalion Section (x3)	2-0-19

Table 7: Reorganization of 46th AIR; September 20, 1943

Old unit	New unit
46th AIR (less 1st & 2d Bn)	46th AIB
1st Bn, 46th AIR	47th AIB
2d Bn, 46th AIR	15th AIR & 85th Cav Recon Sqn (less Trp D & E)

Table 8: Armored infantry unit assignments to Armored Divisions

1st Armd Div	6th AIR (1940–44): 6th, 11th, 14th AIB
2d Armd Div	41st AIR (1940–46)
3d Armd Div	36th AIR (1941–45)
4th Armd Div	51st AIR (1941–43): 10th, 51st, 53d AIB
5th Armd Div	46th AIR (1941–43): 15th, 46th, 47th AIB
6th Armd Div	50th AIR (1942–43): 9th, 44th, 50th AIB
7th Armd Div	48th AIR (1942–43): 23d, 38th, 48th AIB
8th Armd Div	49th AIR (1942–43): 7th, 49th, 58th AIB
9th Armd Div	52d AIR (1942–43): 27th, 52d, 60th AIB
10th Armd Div	54th AIR (1942–43): 20th, 54th, 61st AIB
11th Armd Div	55th AIR (1942–43): 21st, 55th, 63d AIB
12th Armd Div	56th AIR (1942–43): 17th, 56th, 66th AIB
13th Armd Div	59th AIR (1942–43): 16th, 59th, 67th AIB
14th Armd Div	62d AIR (1942–43): 19th, 62d, 68th AIB
16th Armd Div	18th, 64th, 69th AIB
20th Armd Div	8th, 65th, 70th AIB

Besides the 48 divisional AIBs, including those organic to AIRs, 16 separate AIBs (526th–540th) were raised in March and May 1943. These were intended to fill the requirement for GHQ separate battalions pooled at army level for attachment to infantry and armored divisions. The "GHQ pool" concept provided various combat battalions (tank, tank destroyer, field artillery, AAA, engineer) for just such purposes, but this was not the case with the separate AIBs. Most were assigned to the Armored Force or II Corps. Ten were inactivated in August 1943 and their personnel reassigned to reorganizing and deploying AIBs; two were converted to amphibian tractor battalions, and two remained as training units into 1944. Of the separate AIBs, only the 526th saw limited combat in Europe.

ANATOMY OF THE ARMORED INFANTRY BATTALION

While the 1943 AIB was organized on the standard basis of three subunits per echelon, there were unique differences from the standard infantry battalion. It was a self-contained unit, since there was no regimental echelon for support. The September 15, 1943 TOE – see Table 9 – provides an example of the component subunits comprising an AIB's companies; changes were made each year, but they were minor. (Again, personnel strengths are given as: officers–warrant officers–enlisted men.) "Bazooka" 2.36in AT rocket launchers were widely distributed through the battalion for a total of 74; they were not provided dedicated crews. The battalion's 75 halftracks mounted a .50cal or a .30cal machine gun, sometimes both, and each was provided a Thompson submachine gun as on-vehicle equipment (OVE).

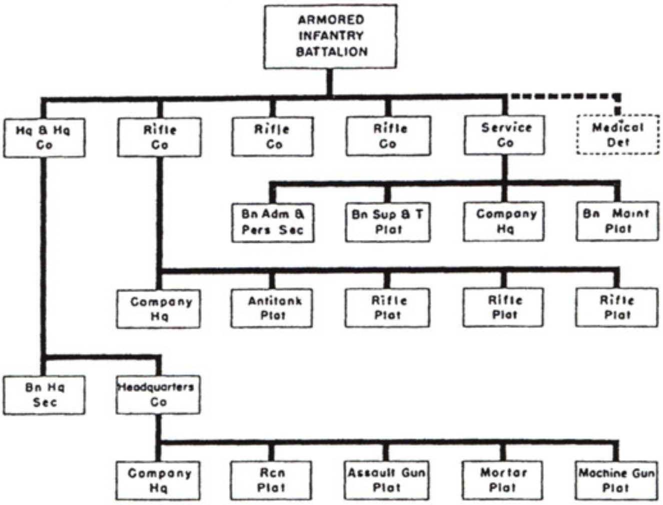
Battalion Headquarters & Headquarters Company

This was home for the battalion staff and the various combat support and crew-served weapons platoons. Armament was 14× 2.36in bazookas, three 75mm SP howitzers, three 81mm SP mortars, seven .30cal MGs, 13× .50cal MGs, 29 SMGs, 34 rifles, 107 carbines, and three pistols. The battalion headquarters consisted of a lieutenant colonel commander; two majors as the XO (executive officer) and S-3 (operations officer); three captains – S-2 (communications officer), S-3 (air), and S-4 (supply officer); and two lieutenants – S-1 (administrative officer) and liaison officer. NCOs included the sergeant major (master sergeant); operations, intelligence, and communications chiefs (technical sergeants), a sergeant message center chief, plus 16 clerks, drivers, radio operators, and messengers. Vehicles were two M3 halftracks and four ¼-ton trucks ("jeeps"); two bazookas were provided.

The HHC's headquarters and maintenance sections both had a halftrack and a jeep plus a bazooka, and the admin, mess, and supply section a 2½-ton truck and 1-ton trailer.

The reconnaissance platoon was equipped with a halftrack and a jeep with bazooka in the headquarters, and two jeeps in each of the two squads (without machine guns). The platoon would scout routes and assembly areas, and help to guide units.

The assault gun platoon had a halftrack in both the headquarters and the ammunition section, the latter with an armored ammunition trailer; both



The armored infantry battalion.

elements had a bazooka.[4] The three assault gun sections each had a 75mm SP howitzer. The 75mm M1A1 pack howitzer mounted on an M3 halftrack, the T30, was used from 1942–43, and replaced by the 75mm M8 SP howitzer. The assault gun platoon normally operated in support of the main attack; seldom if ever would single guns be attached to companies. The platoon could relieve the artillery of some close support missions, but did not replace it. As a secondary mission, assault guns could be grouped as reinforcing artillery, but such missions could not interfere with their primary close support mission. Most AIBs received 105mm howitzer-armed M4 or M4A3 tanks as assault guns between December 1944 and April 1945.

The mortar platoon headquarters had a halftrack and three squads each with an 81mm M4 mortar carrier; each of the four vehicles had a bazooka. The platoon usually operated as a unit to concentrate its fires, but individual squads could be attached to companies. Mortars provided indirect fire support against targets defiladed from other weapons, fired on areas where hostiles had not been definitely located, destroyed obstacles, and fired smoke to screen friendly movements or blind the enemy.

The light machine gun platoon headquarters had a halftrack, as did each of the two sections. Two five-man squads rode in each halftrack, each squad with a .30cal M1919A4 light machine gun; some units used .30cal M1917A1 HMGs as a more accurate and longer ranged direct and indirect fire weapon. The guns could be mounted on the halftrack when moving, but were mainly used dismounted. A section could be attached to the two forward rifle companies or kept under battalion control. Each of the platoon's three halftracks carried a bazooka.

Units did not always strictly comply with TOEs. For example, in early 1945 the 66th AIB's mortar platoon had six 81mm mortars organized into three two-tube sections, and the assault gun platoon had two 75mm M8 SP howitzers and one 105mm howitzer-armed Sherman.

Rifle companies

The earlier organization used from March 1942 should be considered before that introduced from September 1943. An oddity of the armored rifle platoon was that the headquarters doubled as the first rifle squad, led by a designated squad leader when dismounted; it was sometimes called the "platoon leader's squad." Other platoon peculiarities were the MG and mortar squads, elements not found in standard infantry rifle platoons as they were part of the

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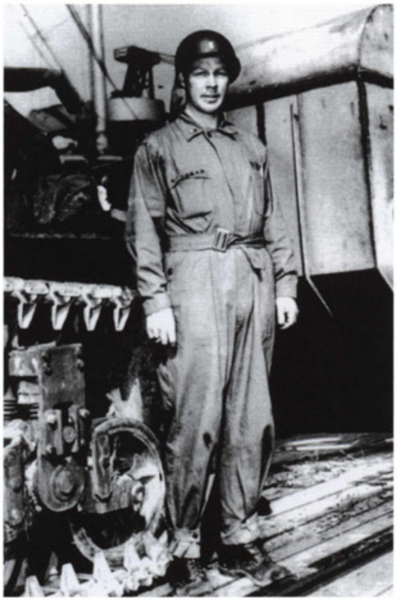
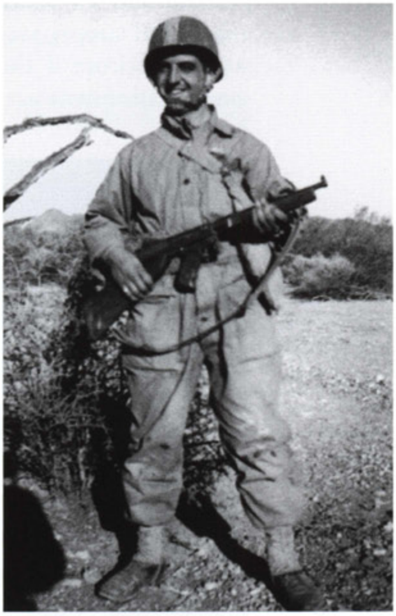
[4] M8 armored ammo trailer (limited standard – capacity 93× 75mm), or M10 (standard from 1944 – 117× 75mm or 44× 105mm).

Table 9: Armored Infantry Battalion, September 15, 1943, TOE 7-25

36-3-962 (39-3-995 w/medical detachment)	
HQ & HQ Co, TOE 7-26	14-0-159
Battalion Headquarters	8-0-21
Headquarters Company	6-0-138
Company Headquarters	2-0-37
Headquarters Section	1-0-5
Maintenance Section	1-0-7
Admin, Mess, & Supply Section	1-0-25
Reconnaissance Platoon	1-0-20
Platoon Headquarters	1-0-4
Reconnaissance Squad (×2)	0-0-8
Assault Gun Platoon	1-0-23
Platoon Headquarters	1-0-6
Assault Gun Section (×3)	0-0-4
Ammunition Section	0-0-5
Mortar Platoon	1-0-6
Platoon Headquarters	1-0-6
Mortar Squad (×3)	0-0-6
Machine Gun Platoon	1-0-34
Platoon Headquarters	1-0-10
Machine Gun Section (×2)	0-0-12
Section Headquarters	0-0-2
Machine Gun Squad (×2)	0-0-5
Armored Rifle Co (×3), TOE 7-27	**6-0-245**
Company Headquarters	2-0-48
Headquarters Section	1-0-8
Maintenance Section	1-0-6
Admin, Mess, & Supply Section	1-0-34
Rifle Platoon (×3)	1-0-55
Platoon Headquarters & Rifle Squad	1-0-11
Rifle Squad (×2)	0-0-12
Mortar Squad	0-0-8
Machine Gun Squad	0-0-12
Antitank Platoon	1-0-32
Platoon Headquarters	1-0-2
Antitank Squad (×3)	0-0-10
Service Co, TOE 7-29	**4-3-68**
Company Headquarters	2-0-22
Headquarters Section	1-0-4
Maintenance Section	1-0-4
Admin, Mess, & Supply Section	0-0-14
Battalion Supply & Transportation Platoon	1-1-21
Battalion Maintenance Platoon	1-1-20
Battalion Admin & Personnel Section	0-1-5
Medical Detachment	**3-0-33**

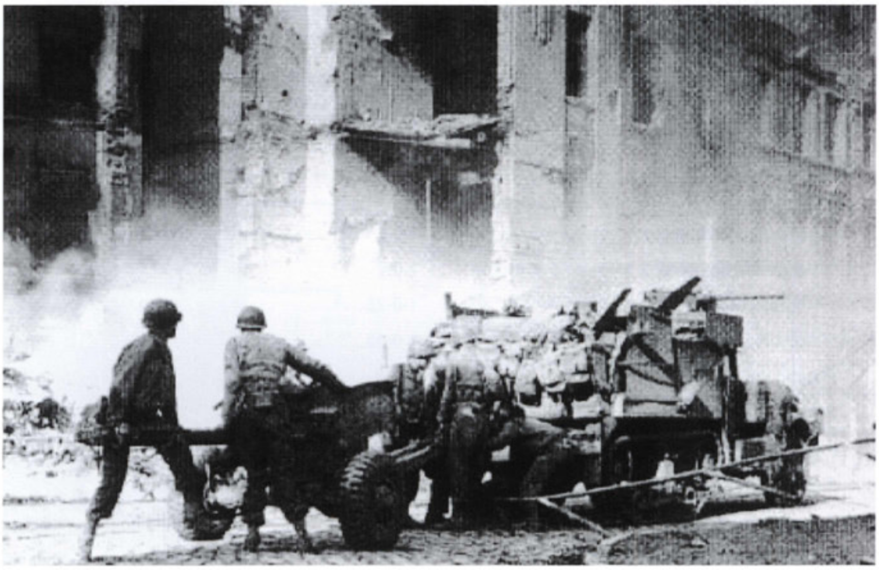


It was not uncommon for armored infantrymen to wear mechanic's coveralls or one-piece herringbone twill working suits, as worn by this lieutenant. He appears to have his serial number stenciled on the right pocket flap and possibly his name on the left. Armored infantrymen were sometimes called "armored doughs" or "blitz doughs" (derived from "doughboys"), though these were mainly news reporters' expressions.

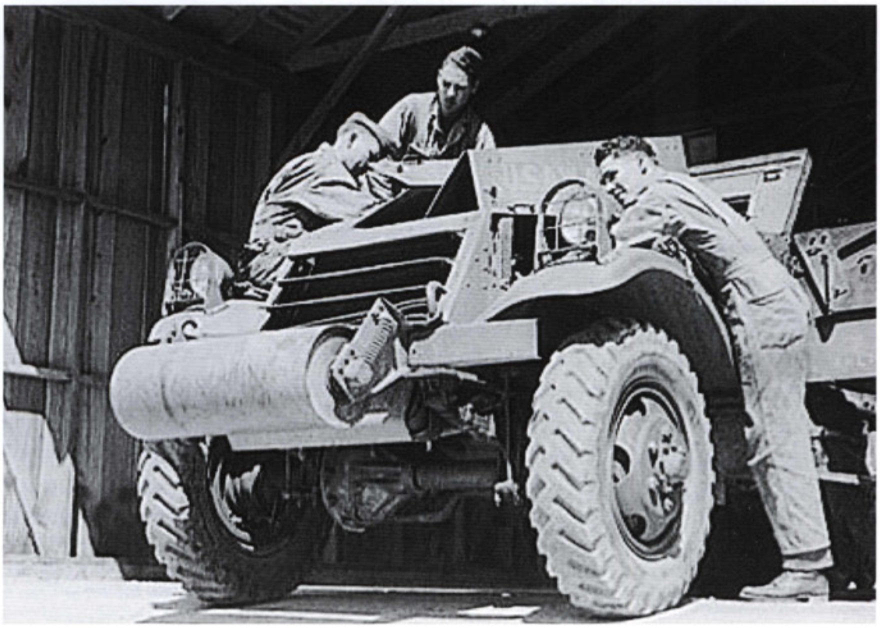


This armored infantryman, armed with the .45cal M1A1 Thompson SMG that was issued as "on-vehicle equipment," wears the one-piece HBT working suit. He has a gasmask bag slung under his left arm, an item not much seen after the North African campaign.

A crew of a company's antitank platoon unlimbers its 57mm M1 AT gun from an M2 halftrack car. Note the crew's musette bags slung on the rear; it was quickly found that hanging them on the sides would get them torn off by vegetation and rubble.



company weapons platoon. The former had two LMGs; standard MG squads had only one gun. The platoon headquarters towed a 37mm M3A1 AT gun behind its halftrack, although this sometimes hampered maneuverability; it had only two dedicated crewmen, but riflemen would serve as ammunition handlers. There was no form of company weapons platoon, all supporting weapons being organic to the rifle platoons. Although not originally envisioned for that purpose, this organization proved to be of value when rifle platoons were married to tank platoons. The company headquarters section had an additional 37mm M3A1 AT gun, and the administration, mess, and supply section had a 37mm M6 SP AT gun (with a towed 37mm as a substitute if the ¾-ton truck-mounted M6 was not available). This organization was used in North Africa – see Table 10.



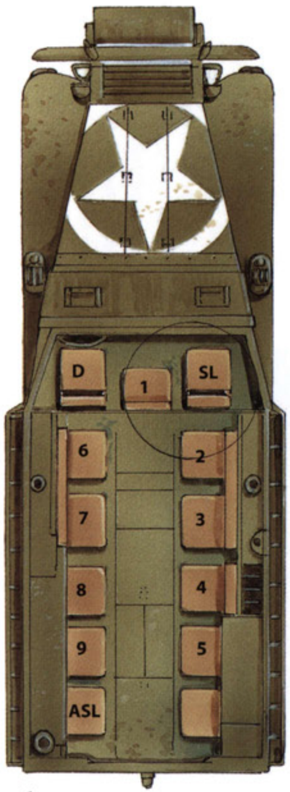
The company maintenance sections and the battalion maintenance platoon were responsible for keeping the battalion's 130 half-tracked, full-tracked, and wheeled vehicles operational. Note the haftrack's "chevron" tires for maximum traction. Some units mounted them reversed, on the theory that the vehicle had more power in reverse gear and could more easily back out if stuck in mud.

Table 10: Armored Rifle Platoon, March 1, 1942

(platoon total, 49 all ranks)		
Platoon Headquarters & 1st Rifle Squad	(12)	
Platoon commander	2nd lieutenant	M1 carbine
Platoon sergeant	staff sergeant	M1 carbine
Squad leader	sergeant	M1 rifle
Antitank gunner	pvt/pfc	M1 carbine
Assistant AT gunner	pvt/pfc	M1 carbine
Rifleman (×5)	pvt/pfc	M1 rifle
Basic soldier	pvt/pfc	M1 rifle
Driver	pvt/pfc	M1928A1 SMG
M3 halftrack personnel carrier w/.30cal M1919A4 LMG		
37mm M3A1 AT		
2d & 3d Rifle Squads	(each 12)	
Squad leader	sergeant	M1 rifle
Asst squad leader	corporal	M1 rifle
Rifleman (×9)	pvt/pfc	M1 rifle
Driver	pvt/pfc	M1928A1 SMG
M3 halftrack personnel carrier w/.30cal M1919A4 LMG		
Mortar Squad	(7)	
Squad leader	sergeant	M1 carbine
Mortar gunner	pvt/pfc	M2 mortar, M1911A1 pistol
Asst mortar gunner	pvt/pfc	M1911A1 pistol
Ammunition handler (×2)	pvt/pfc	M1 carbine
Basic soldier	pvt/pfc	M1 rifle
Driver	pvt/pfc	M1928A1 SMG
M3 halftrack personnel carrier w/.30cal M1919A4 LMG		
Machine Gun Squad	(8)	
Squad leader	sergeant	M1 rifle
Asst squad leader	corporal	M1 rifle
Machine gunner (×2)	pvt/pfc	M1919A4 LMG, M1911A1 pistol
Ammunition handler (×2)	pvt/pfc	M1 carbine
Basic soldier	pvt/pfc	M1 rifle
Driver	pvt/pfc	M1928A1 SMG
M2 halftrack car w/.50cal M2 MG		

The September 1943 reorganization – see Table 11 – retained the basic 1942 platoon structure with the mortar and MG squads enlarged; the latter received three riflemen, allowing it to function to some extent as a maneuver squad, but also to carry more ammunition and provide security. Carbines replaced pistols to provide more "rifle" strength. This platoon had the highest strength and the most firepower of any US rifle platoon. Exclusive of drivers, the 1st Squad was two men smaller than the others and lacked an assistant squad leader, though a man would be appointed. The platoon sergeant would ride in a different halftrack than the commander.

All five squads received a bazooka; the 37mm AT guns were withdrawn from the company and platoon headquarters, since the bazooka alleviated the need for them. The former platoon AT guns were concentrated in a new company AT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ASL

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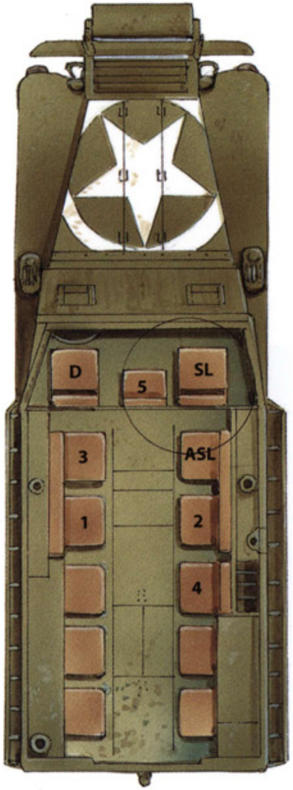
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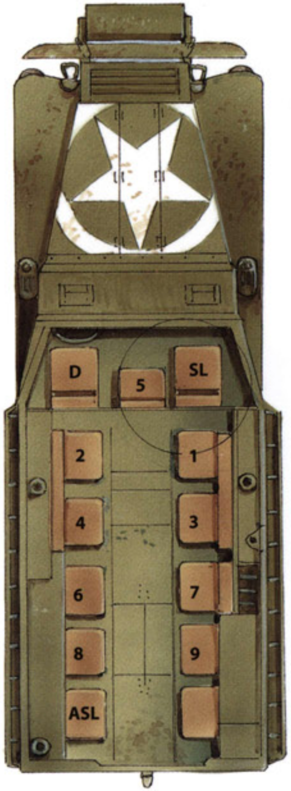
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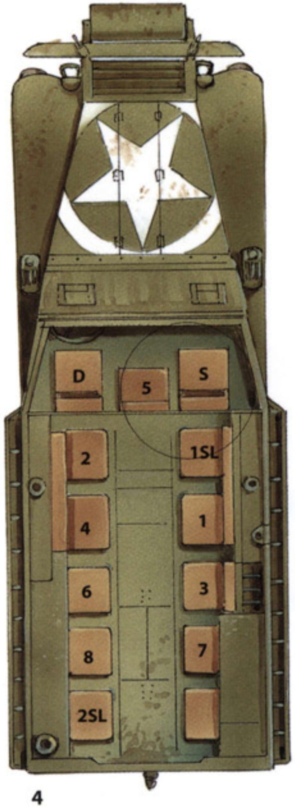
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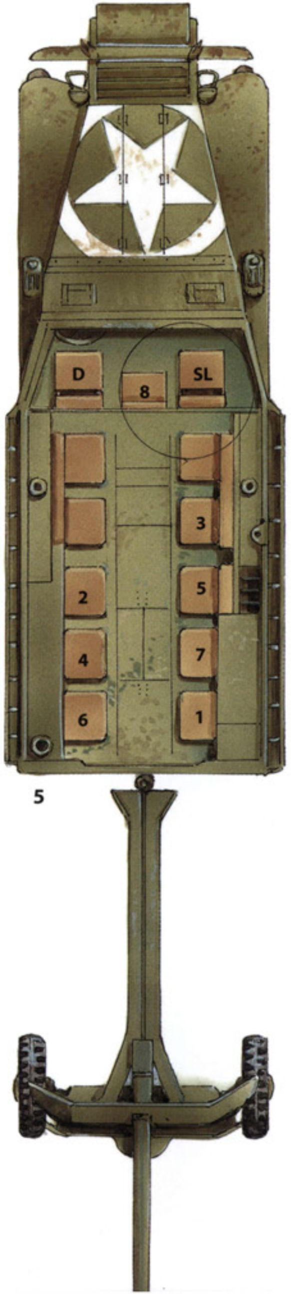
2SL

4


D
8
SL
3
2
5
4
7
6
1

5

(1) 2d & 3d Rifle Squads
SL = Squad leader
ASL = Asst squad leader
D = Driver
1–9 = Riflemen

(2) 60mm Mortar Squad
SL = Squad leader
ASL = Asst squad leader
D = Driver
1 = Mortar gunner
2 = Asst Mortar gunner
3–5 = Ammunition handlers

(3) Light Machine Gun Squad
SL = Squad leader
ASL = Asst squad leader
D = Driver
1 & 2 = Machine gunners
3 & 4 = Asst machine gunners
5 & 6 = Ammunition handlers
7–9 = Riflemen

(4) Heavy Machine Gun Section
S = Section leader
D = Driver
1SL = 1st Squad leader
2SL = 2d Squad leader
1 & 2 = Machine gunners
3 & 4 = Asst machine gunners
5–8 = Ammunition handlers

(5) Antitank Squad
SL = Squad leader
D = Driver
1 = Antitank gunner
2–5 = Cannoneers
6–8 = Ammunition handlers

platoon, so did not hinder the maneuverability of rifle platoon halftracks.

A number of weapon changes were authorized in 1944. The M3 SMG and M1C sniper rifle replaced M1/M1A1 SMGs and the M1903A4 rifle in August 1944, and the M1919A6 LMG and M2 carbine replaced the M1919A4 LMG and M1 carbine in November. However, few if any units received these weapons other than the M3 "grease gun," and none received the M2 carbine before the war's end. In most cases there was no sniper rifle. The M1A1 bazooka was replaced by the M9 in January 1944 and by the M9A1 in November, and these were soon issued. It should be noted that the rifle and mortar squads' halftrack-mounted .30cal water-cooled HMGs were usually replaced with .50cal or .30cal air-cooled guns.

The rifle company headquarters and maintenance sections both had a halftrack and a jeep, the latter section with a trailer; the admin, mess, and supply section had two 2½-ton trucks and trailers, and each section had a bazooka. A lieutenant motor transport officer headed the maintenance section and the first sergeant oversaw the admin, mess, and supply section. There was no designated company XO, but the MTO usually performed this duty. The new antitank platoon – see Table 12 – had a jeep in the headquarters and three halftracks to tow the 57mm M1 AT guns; some units used the 37mm M3A1 until sufficient 57mm pieces were available in 1944. Rifle company firepower was considerable, with 18× 2.36in bazookas, three 57mm AT guns, three 60mm mortars, 16× .30cal MGs, 10× .50cal MGs, 25 SMGs, 145 rifles, 78 carbines, and 18 M7 rifle grenade launchers (two per rifle squad from 1944). Mobility was provided by 20 halftracks, two 2½-ton cargo trucks, three 1-ton cargo trailers, and three jeeps.

Service Company

This was where the battalion concentrated its administrative, supply, transport, and maintenance assets. It controlled as the battalion's rear echelon, although elements would operate forward with the line companies. The company possessed six 2.36in bazookas, one 81mm mortar, five .30cal and six .50cal MGs, 22 SMGs, and 53 carbines. The headquarters section had a ¾-ton Dodge command car; the maintenance section had a jeep and a 2½-ton truck with trailer; and the administrative, mess, and supply section a 2½-ton truck and trailer.

The supply and transportation platoon's supply trucks delivered ammunition, fuel, lubricants, rations, and water to the line companies and HHC elements. It was equipped with nine 2½-ton cargo trucks with five 1-ton cargo and four ammunition trailers, a ¾-ton Dodge weapons carrier, and a jeep, and had three bazookas. The maintenance platoon conducted

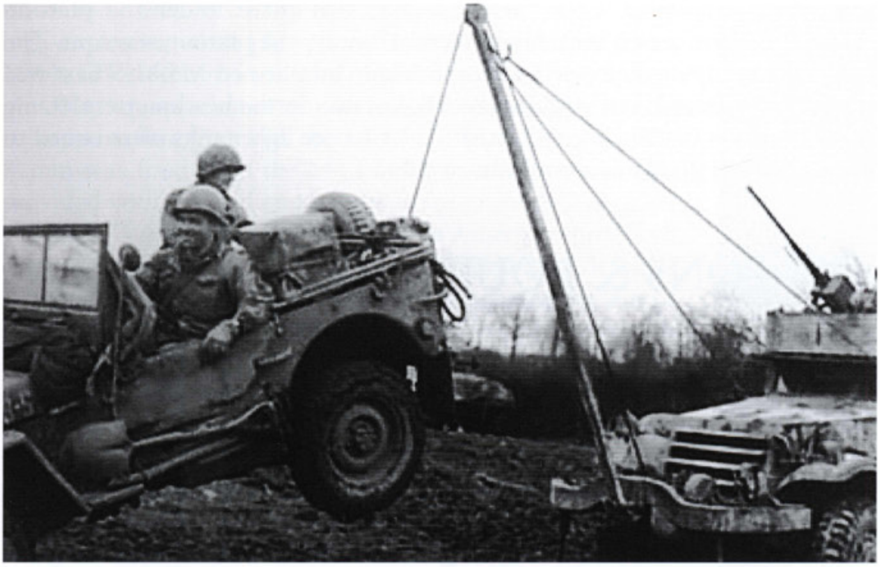
B **HALFTRACK SEATING ARRANGEMENTS**

The specified seating arrangements were intended to allow the troops to dismount and move quickly into tactical formations, or get their crew-served weapons into operation, with the minimum of shuffling about. The Platoon Headquarters and 1st Rifle Squad (not shown) would be mounted similarly to the 2d and 3d Squads (**1**), but with the platoon commander riding in the place of the squad leader (SL). Note that the platoon sergeant is not shown in any of the diagrams; he would usually ride in the platoon's tail-end halftrack, often that of the Mortar or Machine Gun squad. The Antitank Squad (**5**) is a component of the company AT Platoon, but the Heavy Machine Gun Section (**4**) is a component of the battalion MG Platoon. Halftrack drivers received specialized training and oversaw their vehicle's maintenance, in which all squad members assisted; they in turn would train other squad members as relief drivers, and one was appointed as the assistant driver.

vehicle and equipment maintenance and recovery of damaged vehicles. Its vehicles included an M32 tank recovery vehicle (M4 chassis), a halftrack, an M1 or M1A1 (late 1944) La France heavy wrecker, two 2½-ton trucks with 1-ton trailers, and a jeep. Armament included two bazookas, and an 81mm mortar mounted on the M32 to deliver screening smoke when recovering vehicles (the M31 with the M3 medium tank chassis, used by some units,

Table 11: Armored Rifle Platoon, September 15, 1943

(platoon total, 49 all ranks)		
Platoon Headquarters & 1st Rifle Squad	(12)	
Platoon commander	2nd lieutenant	M1 carbine
Platoon sergeant	staff sergeant	M1 carbine
Squad leader	sergeant	M1 rifle
Rifleman (×7)	pvt/pfc	M1 rifle
Rifleman (sniper)	pvt/pfc	M1903A4 sniper rifle
Driver	tech 5	M1/M1A1 SMG
2.36in M1A1/M9/M9A1 rocket launcher		
M4 ground signal projector		
M3A1 halftrack personnel carrier w/.50cal M2 MG		
2d & 3d Rifle Squads	(each 12)	
Squad leader	sergeant	M1 rifle
Asst squad leader	corporal	M1 rifle
Rifleman (×9)	pvt/pfc	M1 rifle
Driver	tech 5	M1/M1A1/M3 SMG
2.36in M1A1/M9/M9A1 RL		
M3A1 halftrack personnel carrier w/.30cal M1917A1 HMG		
Mortar Squad	(8)	
Squad leader	sergeant	M1 rifle
Asst squad leader	corporal	M1 rifle
Mortar gunner	pvt/pfc	M2 mortar, M1 carbine
Asst mortar gunner	pvt/pfc	M1 carbine
Ammunition handler (×3)	pvt/pfc	M1 carbine
Driver	tech 5	M1/M1A1/M3 SMG
2.36in M1A1/M9/M9A1 RL		
M3A1 halftrack personnel carrier w/.30cal M1917A1 HMG		
Machine Gun Squad	(12)	
Squad leader	sergeant	M1 rifle
Asst squad leader	corporal	M1 rifle
Machine gunner (×2)	pvt/pfc	M1919A4 LMG, M1 carbine
Asst machine gunner (×2)	pvt/pfc	M1 carbine
Ammunition handler (×2)	pvt/pfc	M1 carbine
Rifleman (×3)	pvt/pfc	M1 rifle
Driver	tech 5	M1/M1A1/M3 SMG
2.36in M1A1/M9/M9A1 RL		
M3A1 halftrack personnel carrier w/.50cal M2 MG		
(*Note:* Staff sergeant, sergeants, and corporals increased one grade Jan 7, 1944)		



Each of the battalion's five companies had a maintenance section, and the service company a maintenance platoon; each was assigned an M3A1 halftrack with winch as a recovery vehicle. Some units fitted a hoisting boom, as being demonstrated here.

lacked the mortar). The administrative and personnel section had a 2½-ton truck with trailer, and a bazooka. The medical detachment provided a battalion aid station, three litter teams, and three halftrack ambulances; the only other vehicles were a jeep and a 1-ton trailer towed by one of the armored ambulances. Two medics were detailed to each rifle company, and all personnel were armed with carbines.

Operating alongside armored infantry, a medium tank company headquarters was similar to the armored rifle company's, but the headquarters section also had two 75/76mm gun-armed M4 Shermans, a 105mm howitzer-armed Sherman assault gun, and a M32 tank recovery vehicle. Many companies lacked the assault gun, and others replaced one tank in each platoon with an assault gun. The three tank platoons each had

Table 12: Antitank Platoon, September 15, 1943

(platoon total, 33 all ranks)		
Platoon Headquarters	(3)	
Platoon commander	2nd lieutenant	M1 carbine
Platoon sergeant	staff sergeant	M1 carbine
Messenger (truck driver)	pvt/pfc	M1/M1A1/M3 SMG
M4 ground signal projector		
¼-ton truck		
AT Squad (x3)	(each 10)	
Squad leader	sergeant	M1 carbine
Antitank gunner	corporal	M1 carbine
Cannoneer (×4)	pvt/pfc	M1 carbine
Ammunition handler (×3)	pvt/pfc	M1 rifle
Driver	tech 5	M1/M1A1/M3 SMG
57mm M1 AT gun		
M3A1 halftrack personnel carrier (2x w/.50cal M2 MG, 1x w/.30cal M1917A1 HMG)		
(*Note:* Staff sergeant, sergeants, and corporals increased one grade Jan 7, 1944)		

five tanks, employed as a "heavy section" of three under the platoon commander and a two-tank "light section" under the platoon sergeant. The light tank company equipped with the 37mm gun-armed M5A1 Stuart was similarly organized, but with just two light tanks in the headquarters. (Only small numbers of 75mm gun-armed M24 Chaffee light tanks were issued to some armored divisions from January 1945.)

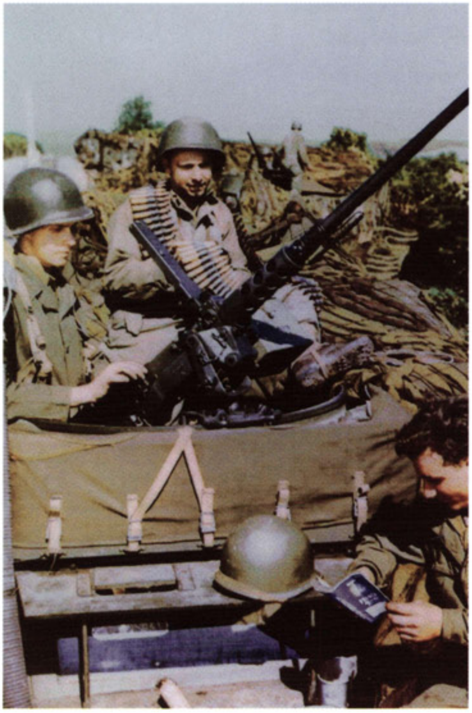
WEAPONS & EQUIPMENT

Weapons

Armored infantry units used the same weapons as other infantrymen, but they were allotted somewhat differently. They were not issued .30cal Browning automatic rifles (BAR) owing to the rifle platoon's seven machine guns and five submachine guns. The Garand .30cal M1 rifle was a semi-automatic with an eight-round magazine. The semi-automatic .30cal M1 carbine had a 15-round magazine, and used a shorter cartridge than the M1 rifle and machine guns; it was issued to weapons crewmen, support personnel, and officers. Armored infantry units possessed more Thompson .45cal M1928A1, M1, or M1A1 SMGs, with 20- and 30-round magazines, than any other unit; these were issued to halftrack drivers, and it was not uncommon for the squad leader or another individual in a squad to use one. From mid 1944 the "Tommy guns" began to be replaced with .45cal M3 "grease guns."

Limited use was made of .30cal M1903, M1903A1, and M1903A3 Springfield bolt-action rifles into 1944, with one per rifle squad; Springfields with an M1 rifle grenade launcher were used until the M7 launcher for the M1 became available late in 1943. Two M7s were issued per squad; they launched M9A1 antitank, M17 antipersonnel, and various pyrotechnic signal (colored smoke and flare) grenades. Hand grenades included the Mk II and Mk IIA1 "pineapple" fragmentation, Mk IIIA1 "concussion," AN-M8 white smoke, AN-M14 thermite incendiary, M15 white phosphorus, and M16 and M18 colored smoke.

The M49 mount for a .50cal M2 machine gun on an M3A2 halftrack. The ammunition belt appears to contain repeating five-round sequences of two armor-piercing, two incendiary, and one armor-piercing/incendiary/tracer. Note the camouflage net draped over the vehicle's rear. Aircraft sentries were always posted when the squad was mounted; by 1944 attack by Allied aircraft was more likely than by German, and all aircraft were watched with equal suspicion.



Both Browning .30cal M1919A4 light air-cooled and M1917A1 heavy water-cooled machine guns were important weapons, although the latter saw less use; more expensive, it was often replaced with the M1919A4. The Browning .50cal M2 machine gun mounted on some halftracks was an extremely deadly weapon for suppressive fire owing to its ability to penetrate typical cover. These machine guns could be used against ground and aerial targets; while the guns were mounted on halftracks, tripods were provided for ground-firing.

The bazooka provided the infantry with a lightweight, man-portable AT weapon. The M1 bazooka (two handgrips) was introduced in 1942 and the M1A1 (one handgrip) in 1943; both had a 250-yard range. The M9 and M9A1 (improved barrel coupling latch) introduced in mid 1944 had a 300-yard range.

The 60mm M2 mortar was provided to rifle platoons while the 81mm M1 was a battalion weapon, with ranges of 1,985 and 3,290 yards respectively; both fired high-explosive, white phosphorous, and illumination (from 1944). The 60mm was fired dismounted, although it is possible that some units may have built a sandbag platform to support firing it from the back of their halftrack. The 81mm was fired from the M4 mortar carrier but was also provided with a bipod and baseplate for ground-firing.

The 57mm M1 antitank gun was an American-produced copy of the British 6-pdr Mk 2 with a longer barrel. It was a reasonably effective weapon capable of penetrating 3in of armor at 1,000 yards, and could knock out Panthers with well-placed side and rear shots. It was provided with armor-piercing and AP capped ammunition; an HE shell was not available until late 1944, thereafter improving its value as a support weapon. The 75mm M8 SP howitzer of the assault gun platoon was mounted on an M5 light tank chassis, and with an open-topped turret and very light armor it was not intended for direct close assault. It had a 9,600-yard range and carried 46 rounds, and also mounted a .50cal machine gun.

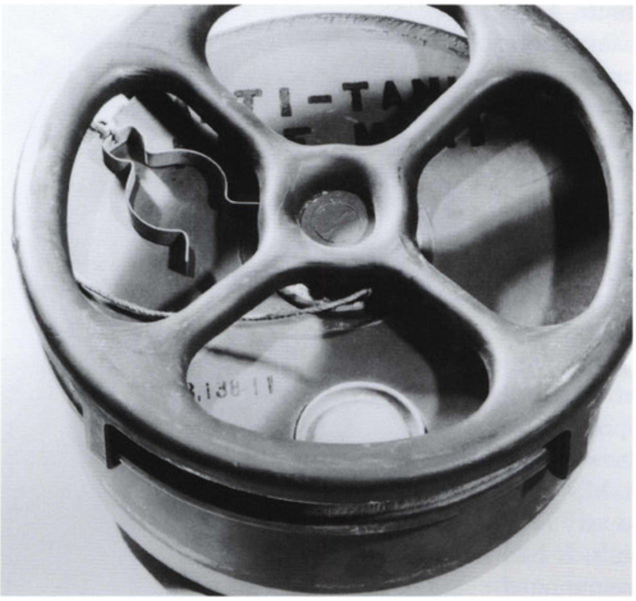
The 60mm M2 mortar equipped the armored rifle platoon's light mortar squad. Since there was no fire direction center for centralized fire control, the 60mm was usually used to engage line-of-sight targets and seldom for indirect fire. In the background, the squad leader uses an SCR-536 "handie-talkie" radio, which most armored infantry units did not receive until the beginning of 1945.

The halftrack

The development of halftrack vehicles began at the end of World War I, but it was not until the mid 1920s/early 1930s that the US Army undertook serious development. The first halftracks were envisioned as unarmored artillery prime movers and utility vehicles – for example, for laying field telephone wire. The American designs were influenced by French Citroen-Kegresse halftracks.

Halftracks were basically trucks with the rear wheels replaced by track systems that produced less ground pressure, thus enabling them to traverse mud, soft ground, and snow. The tracks also provided improved traction and enabled them to better negotiate broken ground and debris. Halftracks were provided a roller mounted on the front bumper to aid in crossing ditches and gulleys; this was only marginally effective, and was replaced by a 200ft cable winch for self-extraction. The front wheels were powered, but vulnerable to antipersonnel mines. Regardless of their improved cross-country ability compared to trucks, they were not heavy full-tracked vehicles and could only negotiate moderately difficult terrain and obstacles, so could not always keep up with tanks. The 12in tracks were heavy cleated continuous rubber bands, not steel links like those of tanks. In the late 1930s the Army developed lightly armored halftracks not only as prime-movers, weapons carriers, and support vehicles, but also as armored personnel carriers intended to accompany tanks. Three halftracks were standardized in September 1940.

The M2 halftrack car was almost identical to the more common M3, except for having a 10in shorter passenger compartment; the "wheelbase" – from the center of the front wheel to the center of the track system – was the same on both vehicles. The M2 was intended as a prime-mover for AT guns, light artillery, and other towed weapons, and ten men could be seated in the passenger compartment. The M3 halftrack personnel carrier had a longer passenger compartment seating 13, and was provided with a rear exit door – a feature the M2 lacked. It was intended to carry a rifle squad, and was also

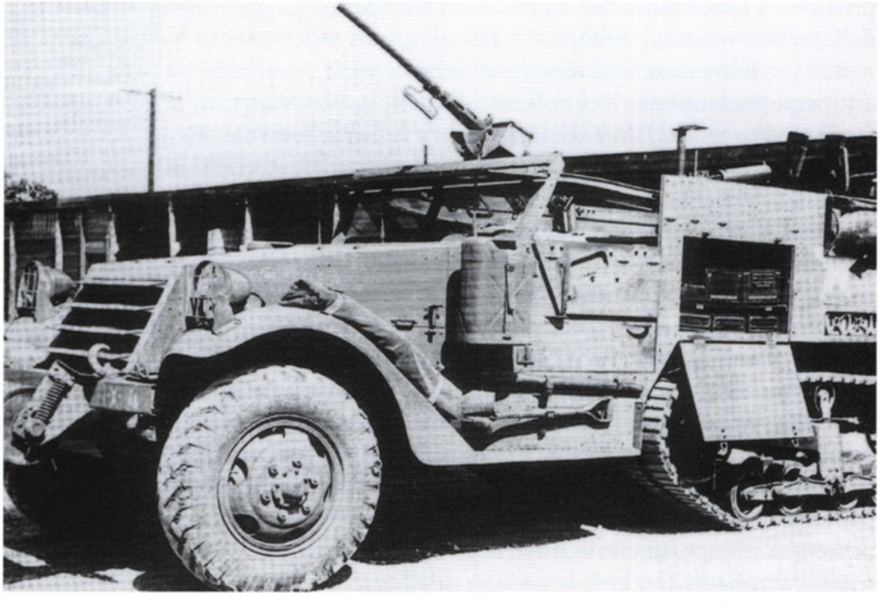


M1A1 antitank mines were carried aboard halftracks to enable the infantry to quickly lay an AT barrier if a defense was established, and to block approaches from the flanks when advancing; they might sometimes be laid exposed, and then recovered when the advance continued. The 10.8lb mine contained 6lb of TNT; it was painted olive drab with black markings, a yellow band around the bottom and a yellow filler cap.

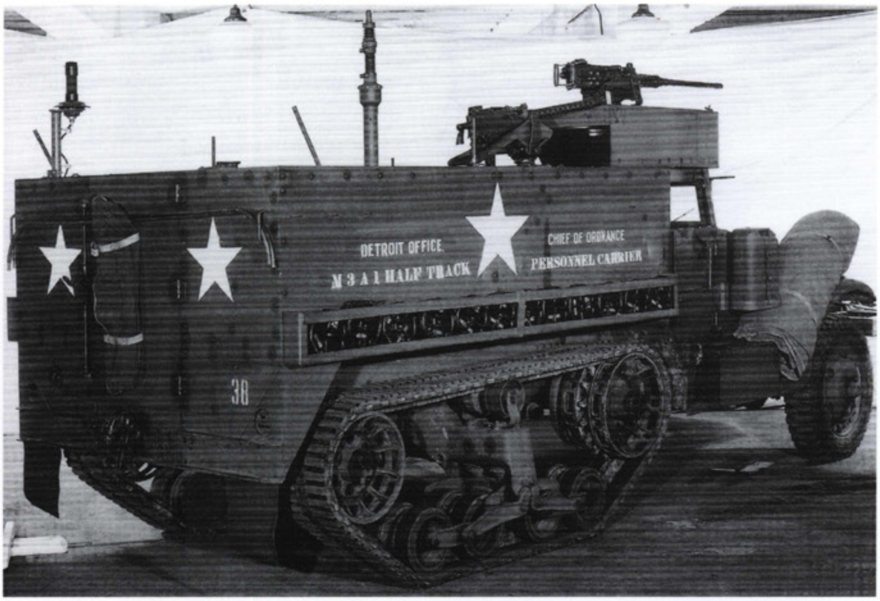
used as the basis for various self-propelled mounts (SPM) for a wide variety of weapons. The M3 and its later production variants were the workhorses of the armored infantry.

The M4 mortar carrier was an M2 modified to mount a rearward-firing 81mm M1 mortar, and had bins installed for ammunition (96 rounds) and mortar-specific equipment; it had a crew of six and a rear door. In North Africa it was found that the rearward-firing mortar was not the best option, as it required the carrier to make a 180 degree turn and back into position; the mortar had only a limited left and right traverse (65 mils either way). Some units field-modified their vehicles and mounted the mortar to fire forward, thus allowing the carrier to simply halt, conduct a fire mission, and move on.

Halftracks were provided with various convenience features. Considering that they might run at high speed cross-country, padded seats and backrests were installed. There were racks for the troops' individual weapons, hand-grenade stowage, equipment storage space behind the passenger seats, small equipment compartments, external tool and equipment racks, MG tripod stowage, two 5gal gasoline can brackets, and – on later production vehicles – external racks for AT mines. The M2 had large ammunition storage bins on both sides in the forward part of the passenger compartment, accessed through the top from inside the compartment or through exterior side doors; these bins were for ammunition for the weapon for which the M2 was serving as prime-mover. Most halftrack variants had storage for 700 rounds of .50cal, 7,750 rounds of .30cal, and six



The M2 halftrack car had a 10in shorter passenger compartment than the M3 passenger carrier, but otherwise had the same dimensions. Note the ammunition compartments unique to the M2, with opening hatches behind the cab doors.

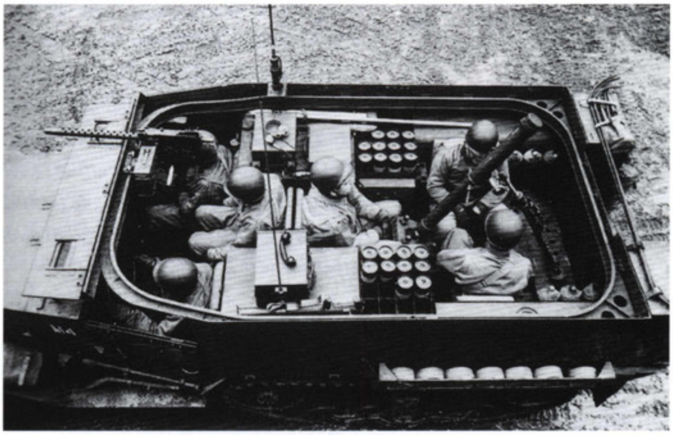


A prototype M3A1 halftrack, with the box-like M49 MG mount over the commander's seat. The large roll on the right front fender is a 36 × 44ft camouflage net, rolled in a canvas cover to prevent branches and brush from snagging on it. The side rack contains M1A1 AT mines.

bazooka rockets. The driver's and passenger compartments were open-topped, exposing the occupants to weather, air-bursting shells, and grenades. A raised canvas cover supported by bows was provided but was seldom used in the field, since it restricted all-round visibility, firing mounted and individual weapons, and rapid exit over the sides.

Armament was initially a .50cal M2 HMG on a pedestal mount in the forward end of the passenger compartment and a .30cal M1919A4 LMG on either side (or initially, water-cooled M1917A1s). On early models the .30cals were mounted on skate-rails running the length of each side and curving around the back end; these were replaced by three simple mounting brackets, one on each side and one in the rear. Early M4 mortar carriers had an all-around skate mount for one .30cal, and later models a .30cal mount on either side. In practice most halftracks carried only one machine gun.

Halftrack armor was minimal, being only ¼in (6.5mm) thick homogeneous plate on the front and face-hardened armor on the sides, rear, and floors; the windshield armor flap was ½in (13mm) thick. Vision slits were provided in the windshield flaps and side windows, closed with sliding plates. The later M5 and M9 halftracks had 5/16in (8mm) homogeneous armor all around, and a 5/8in (16mm) windshield flap; this was not an upgrade in protection, but to compensate for the use of "softer" homogenous armor. Except for the shuttered front grill and windshield flap virtually all the armor surfaces were vertical. The armor provided the barest minimum protection from small arms fire and shell fragments; at close range and striking at a near zero-degree angle German 7.9mm ball ammunition could penetrate, and 7.9mm SmK AP penetrated easily. A common complaint was that



An early production M4 mortar carrier, with the 81mm M1 mortar facing to the rear. Note the skate-mount rail for the .30cal M19191A4 machine gun, which allowed it to be traversed to any position in the vehicle. The SCR-509 and -510 radios are fitted atop additional ammunition storage compartments.

The roller aided the crossing of obstacles such as ditches, stream banks and gulleys, preventing the halftrack's bumper from digging into the bank.

bullets penetrated one side and ricocheted about the interior, resulting in halftracks being dubbed "Purple Heart boxes." Halftracks were completely vulnerable to AT guns, Panzerfaust and similar weapons, and the fire of assault guns and tanks. Even small antipersonnel mines could destroy a halftrack's front tire, while a tank could plow through such minefields.

A serious liability was the open driver's and passenger compartments. Air- and tree-bursting artillery rounds were a severe threat; the compartments could be fired into when the vehicles were moving down-slope, and were of course exposed to grenades and to fire from multi-story buildings. Two 30gal self-sealing fuel tanks were mounted inside the passenger compartment, one on either side, in the forward part in the M3 and rear in the M2/M4. A 4lb fire extinguisher was carried in the driver's compartment.

Substitute versions of the halftracks were standardized in 1942, the M5 passenger carrier in June and the M9 halftrack car in July (but the M9 was never produced, being superseded by the M9A1). The M5/M9 were merely M2/M3 versions built by a different manufacturer, and began to be delivered at the end of 1942. A box-like M49 machine gun ring mount over the right side of the driver's compartment was added, resulting in the M2A1, M3A1, M5A1, and M9A1. Besides new-build M3A1s many were converted from M3s and earlier SPMs.[5] Although used by some units for Stateside training the M5, M5A1, and M9A1 were mostly provided as Lend-Lease to the Commonwealth, Free French and Soviets. The M3A2 was fielded to combine the roles of the passenger carrier and halftrack car; the production of halftrack cars ceased in March 1944. A new mortar carrier, the M4A1 with increased traverse (300 mils either way), began to be produced in May 1943. A further improved mortar carrier, the M21, based on the M3 carrier but with a forward-firing mortar, began production in January 1944, but saw only limited use; it mounted a .50cal rather than a .30cal machine gun.

TACTICS: THEORY AND CAPABILITIES

For tanks in direct support of infantry speed was not essential, and a "walking" pace was sufficient, but tanks operating in a breakthrough role and punching into the enemy's rear areas had to move faster. While it was recognized that breakthrough tanks would need some infantry support, the extent was not fully recognized by many armor advocates; the balance of infantry to armor was typically inadequate in all armies, and lessons learned at a high price through the early days of World War II were not fully accepted until 1943.

For all practical purposes there was no formal US armored infantry

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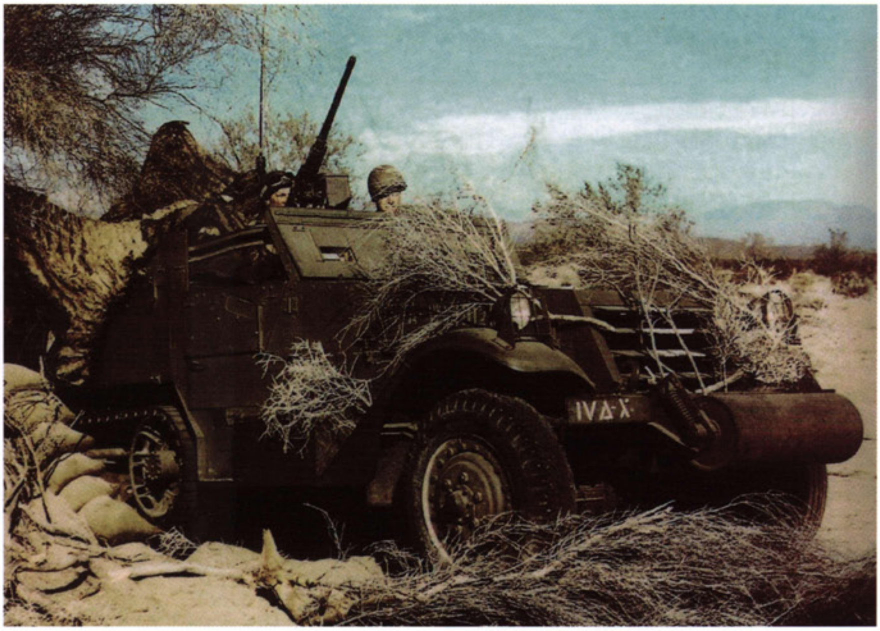
[5] The M2 series were made by Autocar and White Motor Co, the M3 series by the Diamond T Motor Car Co and Autocar Co, and White produced all of the mortar carriers. The M5 series and M9A1 were built by International Harvester Co; White produced all the mortar-carriers. The SP mounts converted to M3A1s included the 75mm gun M3, 57mm gun T48, and 105mm howitzer T19.



An M3 halftrack, showing a non-standard bumper number system, photographed during exercises at the Desert Training Center in California; the camouflage net draped to the rear has been pulled back to give the .50cal MG a clear field of AA fire. The 3d to 7th, 9th, and 11th Armd Divs had the benefit of maneuvers in this massive training area in the Mojave Desert; although none of these formations would fight in North Africa, the amount of unrestricted space for maneuver and live firing was an invaluable training experience.

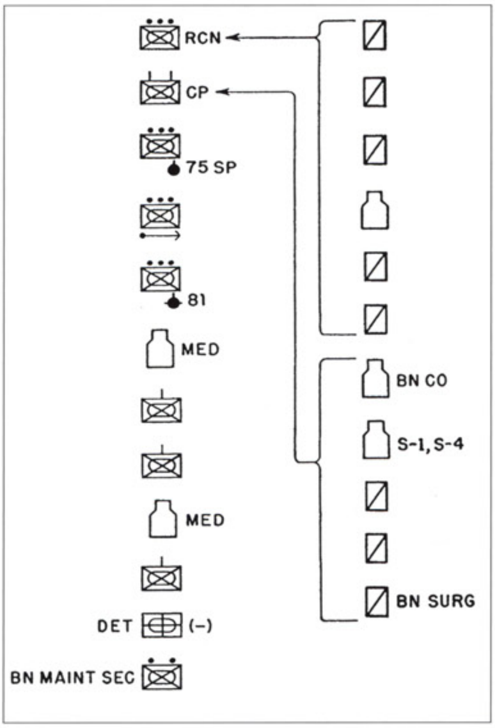
doctrine for most of the war. Armor manuals paid only lip service to the employment and integration of armored infantry, and no armored infantry manuals were published until November 1944, when company and battalion manuals were introduced. By the time they were distributed the war was in its final months, and even then they were of little value, since units had already perfected their own tactics and techniques which seldom matched the dictates of the manuals. This explains, for example, the wide variance in the practice of the task organization and employment of combat commands. The manuals were for the most part developed on outdated theoretical information gleaned from pre- and early-war maneuvers and on lessons from North Africa. Like the tankers' manuals dating from 1942, they only provided minimal information on mutual support and integration of tanks and armored infantry. For instance, an example in the AIB manual of an "illustrated problem (attack of a position)" shows the AIB executing all aspects of the attack with the medium tank company held in reserve and never committed, while in practice the tank company would normally be in the lead with the AIB supporting it. The January 1943 manual *Armored Force Drill* provided just about every possible formation and transition from one formation to another for armored infantry and tank units, from platoon to battalion – but the two types of units were addressed separately, and no consolidated formations were shown or discussed. Many veteran armored infantry leaders were not even aware that manuals existed.

Commanders were issued various after-action reports and training memorandums (often contradictory) by the Armored Force, corps, and other commands. They also studied British battle reports. Many took what limited guidance there was and did the best they could with it, confident that it had been tested and validated by those more knowledgeable. Future regimental and divisional commanders were sent to North Africa to observe operations and learn from commanders and staffs first-hand. While commanders gleaned ideas from all these efforts, they certainly produced no standardization of tactics. Divisions developed their tank-infantry integration practices based on their studies and experiences in exercises. It was often simply the case that the tactics and techniques used by a particular armored division were the opinion of the commander, with input from his staff and unit commanders. They were developed by trial-and-error in training, were refined in combat, and evolved according to further lessons learned, the arrival of new weapons and equipment, adaptation to local terrain and weather, and responses to new enemy tactics.

Armored infantry training

There were no dedicated armored infantry replacement training units other than the 15 separate AIBs that underwent basic infantry and small-unit training and were then broken up in 1943 as fillers to deploying divisions. (Some of those men were even assigned to standard infantry units.) When first committed to combat virtually all replacements, including NCOs and officers, were standard infantrymen with no armored infantry knowledge, and most had not even seen a halftrack. Replacement squad leaders, platoon sergeants and platoon commanders relied on their halftrack driver to orient them, and even to tell them where to sit. Most replacement platoon commanders had undergone a six-week tactical training course at Ft Benning, Georgia, but this included nothing on armored infantry; it focused mostly on weapons familiarization and lectures on fire and maneuver, with few if any practical tactical exercises. This training deficiency was amplified during the infantry replacement shortfall in the winter of 1944/45, when some replacements assigned to AIBs in-theater were not even trained infantrymen. Even units deploying from the USA suffered from inadequately trained troops. It was not uncommon for a battalion to have gone through the unit training cycle and then to be levied to provide scores of NCOs and specialists to cadre a newly raised unit; their original battalion would itself receive untrained replacements on the eve of overseas deployment, with malign results for unit cohesion and confidence.

Typical "administrative" march formation for an armored infantry battalion.



While armored infantry units were generally successful, they were sometimes less than efficient owing to inadequate leadership training. These were in effect combined-arms units down to platoon level; the rifle platoon had its own mortar and machine-gun squads, as well as machine guns mounted on its five halftracks, which were maneuver elements in their own right if used as such. The platoons had to be capable of working with tanks habitually, not just on an occasional basis.

The situation was made more complex by reorganizations and the fielding of new weapons and equipment, for which training-time was always brief and often non-existent. There were units that received bazookas but were unable to employ them; since there were no manuals and no one had been trained to use them, they had to wait until replacements who had received training in their use joined the ranks.

Individual and small-unit training was conducted within the AIB. The armored infantryman first undertook standard infantry training followed by additional

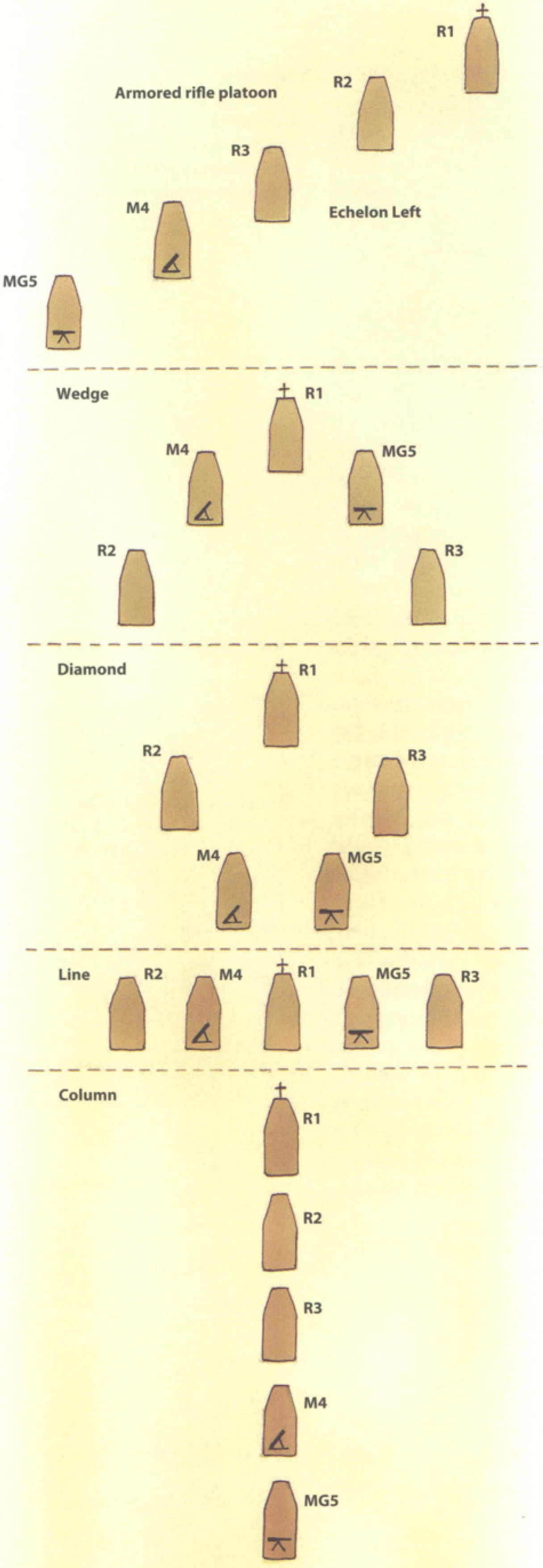
Tank-infantry operations required close cooperation between tankers and armored infantrymen. Here tankers and infantrymen together study their planned route of advance.

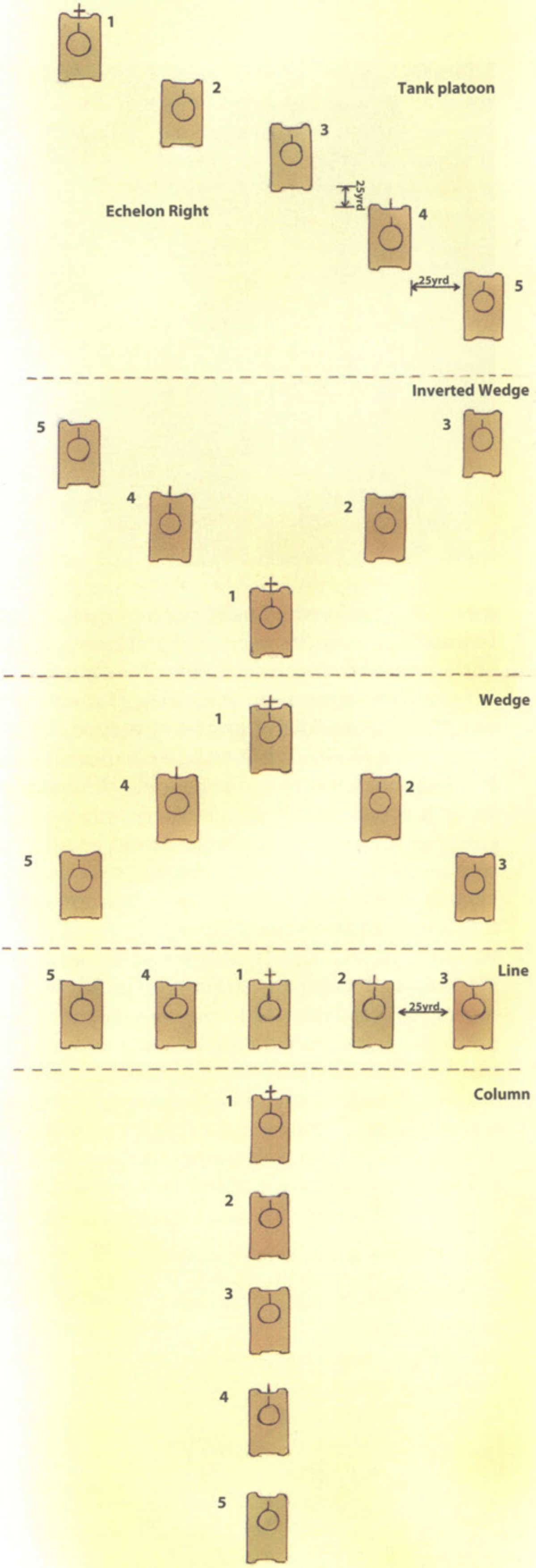
specialized armored infantry skills, as prescribed in the September 12, 1943 *Infantry Training Program.* As can be seen in Table 13, the extent and focus of training were much different.

The formation of an AIB went through several steps of organization, equipping, and training prior to overseas deployment. Upon activation the unit's cadre of officers, NCOs, and specialists were assembled; some came from training units and others would be levied from existing units to provide an at least minimally-experienced core to build the unit around. Mostly conscripted, untrained recruits would be assigned and basic training would commence followed by specialist and technical training, all given by the NCO and officer cadre. Weapons and equipment training would be integrated into this, as would small-unit training (squad, section, and platoon). This is where weapons crews, squads, and specialist sections learned their jobs. Further platoon and company training would begin, sometimes conducted in maneuver areas away from the unit's home post. Battalion-level training was undertaken as part of divisional maneuvers; with only a couple of exceptions the armored divisions participated in at least one of the big Louisiana, Tennessee, or Carolina maneuvers. The War Department test to ascertain a unit's readiness for overseas deployment was often conducted in conjunction with divisional maneuvers. (During this process the division might have been stationed on two or three different posts, giving them maneuver experience

Table 13: Infantry squad training comparison

Standard infantry		**Armored infantry**	
Subject	*Hours*	*Subject*	*Hours*
Operations of patrols, day & night	8	Tactical training of the infantry soldier	16
Scouting & observing, day & night	8	Tactics of the crew & squad, day & night	56
Bayonet	8	Bayonet	8
Rifle, .30cal	68	Machine gun, .30cal	32
Automatic rifle, .30cal	38	Vehicular crew drill & maintenance	4
Total	130		116


Armored rifle platoon
R1
R2
R3
M4
MG5
Echelon Left
Wedge
R1
M4
MG5
R2
R3
Diamond
R1
R2
R3
M4
MG5
Line
R2
M4
R1
MG5
R3
Column
R1
R2
R3
M4
MG5


Tank platoon
25yrd
Echelon Right
25yrd
Inverted Wedge
Wedge
Line
25yrd
Column

on different types of terrain.) They would then move to a post to get ready for deployment, and then to the port of embarkation. In Britain they usually had some time for additional tactical training and range-firing, at least at the small-unit level; however, from the 7th Armd Div onwards the divisions spent only about two months in Britain before deploying to France, or were even shipped directly from the States to France, and necessary maintenance, preparations and staging left them little time for training.

Movement formations

Regardless of the echelon, units used the same type of movement formations. Dependent on whether they were conducting a movement-to-contact or were engaged, the formation and intervals selected would depend on the terrain, visibility, avenues of approach, enemy situation, mission, and attachments. The unit commander's vehicle was in the center of the line, diamond, wedge, and inverted wedge formations, and in the lead of the line and echelon formations. Irrespective of the size of the unit its subunits were deployed in similar patterns:

Inverted wedge Also known as a "V" formation, it had two subunits forward and one to the rear; this standard "two up and one back" allowed a broad front to be covered, with the rear subunit able to support the forward subunits or move to either flank.

Wedge One subunit forward and two to the rear, echeloned to the right and left. This was used when neither flank was secure, or when the situation indicated that an envelopment or flanking attack might be conducted to one or the other flank.

Echelon The subunits were deployed in a "stepped" or slanted formation to one flank or the other – the flank that was exposed.

Column Subunits following one behind the other on roads, narrow avenues of approach, and when the flanks were secure – the easiest formation to control and the fastest moving.

Line The line formation was only used by dismounted squads and platoons. The dismounted MG and mortar squads could accompany the platoon or provide supporting fire.

Diamond The basic formation for the infantry platoon, not used by tank units. The platoon leader's vehicle and the two other rifle squads formed a

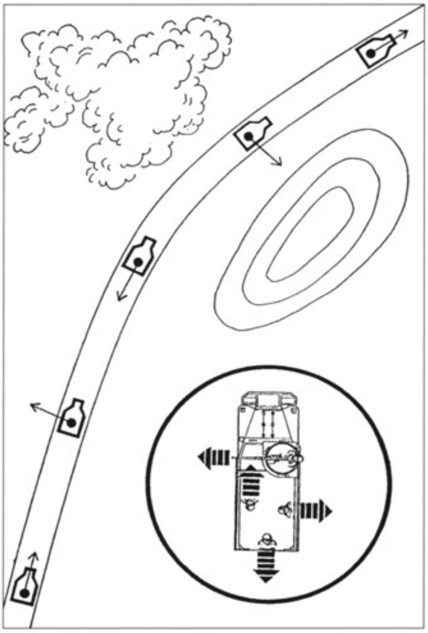
C FORMATIONS – MOUNTED ARMORED RIFLE & TANK PLATOONS

While armored rifle and tank platoons and companies worked side by side and both platoons had five vehicles, their movement formations were different. It should be noted that the rifle platoon did not use the tank platoon's inverted wedge; and that there was no tank platoon equivalent of the rifle platoon's diamond. Each formation had its uses, allowing maximum firepower to the front, flanks, all-round, or in combinations. The column was for rapid and easily controlled movement, and was used frequently, since so much movement was by road. The diamond provided excellent all-round fires; it allowed the mortar and MG squad halftracks to maneuver to either flank, or switch easily into wedge and line formations. The echelon and wedge provided fire to one or both flanks, and the latter still provided effective fire to the front; naturally, the line maximized frontal fire. Intervals depended on terrain, visibility and the tactical situation; the standard "by the book" interval between vehicles on level, open terrain was 25 yards apart sideways and front to rear, and in column formation a 25-yard interval was recommended. Platoons had to learn an orderly transition from one formation to another, and adjustments had to be made when vehicles were battle-damaged, malfunctioned, or left behind bogged down.

Key:

Armored rifle platoon: R1 to R3 = Rifle squads; **M4** = Mortar squad; **MG5** = LMG Squad

Tank platoon: 1 = Platoon leader; **4** = Platoon sergeant



Air security on the march of an armored rifle platoon: machine guns are pointed to the front, right, rear and left, and each halftrack has all-round air observers. The weapons can just as easily engage ground targets.

wedge, with the platoon leader and 1st Squad at the apex, and the mortar and MG squads on line to the rear of the wedge. Whether the companies were formed in line, column, echelon, wedge, or inverted wedge, within each company formation the platoons could be in the diamond formation, which provided all-around observation and fire from the halftrack's machine guns. Depending upon the terrain and tactical situation the subunits would not necessarily be in the same formation as the parent unit. For example, a company in an inverted wedge might have the two forward platoons in a line formation to cover a wide front, while the support platoon to the rear might be in a column.

In combat the company HQ vehicles (other than the company commander's) would constitute the company's rear echelon and be co-located with the battalion service company. The company CO's halftrack is depicted in manuals leading formations, but in reality it would normally be in the center and to the rear of the formation, or behind the lead platoon, in order to see more of the formation and better control it. Other vehicles might accompany the company at times, such as the armored recovery vehicle and the armored ambulance. These might follow to the rear or be integrated into the formation, for instance between the 2d and 3d Platoons. The same applied to the antitank platoon, which is not even depicted in some manuals. For an administrative move the company headquarters vehicles would usually trail the main body of the company.

Tank/armored infantry deployment

When tanks and armored infantry were integrated – as was more the rule than the exception – all or most of the tanks would usually be deployed forward with the infantry following, to be moved forward when necessary. If operating under the paired concept the tank and rifle platoons would be in a mixed formation, perhaps with the tanks forward and the halftracks to the rear, or intermixed within the joint formation according to unit SOP.

Combat saw any mix of movement procedures depending on the unit's preference gained through experience, the terrain, amount of dispersion allowed by visibility, and the enemy situation and tactics. A typical sequence for a movement to contact would see the combined armored infantry and tank companies advancing in a well-dispersed column formation. Reconnaissance platoons and/or light tanks would be reconnoitering forward and guiding the column. Terrain and enemy dispositions would determine the extent of flank security; this was kept to a minimum, as it slowed the column. When approaching the objective or when enemy were encountered the column would begin to deploy into a more dispersed formation to allow the maximum numbers of weapons to engage. An experienced and prudent commander would not rush into the attack before deploying his tanks, TDs, AT guns, mortars and artillery into suitable attack formation, and assigning targets. An experienced unit could do this quickly, to maintain tempo and allow the enemy only minimal response time. The tanks moved forward; the infantry dismounted from their halftracks and joined up with the tanks; and the halftracks moved to /remained in enfilade, although some might have moved to firing positions.

Combat engineers with SCR-625 mine detectors, escorted by armored infantry to the rear, clear a gap through a minefield which has already claimed an M5 light tank.

An armored rifle company attached to a tank battalion might have a rifle platoon following the lead tank platoon and the rest of the company following the tank company. Alternatively, a tank company might be in the lead with the rifle company following, and the other two or three tank companies following it. Another possibility would be for rifle platoons to be paired with tank platoons in the lead company. The second company in the column would be a tank company, followed by a rifle company, and so on. Elements such as the assault gun and mortar platoons would be positioned where they could best be brought into action dependent on the circumstances.

The tank battalion's light tank company was often split up. It or part of it might be directly under the CC as a reconnaissance unit, or platoons might be attached to both the tank battalion and AIB for reconnaissance or flank security missions. One example of their use was that they would follow behind the infantry at night or in forests. When contact was made guides led the tanks forward to engage the enemy with machine guns and 37mm canister (the latter round's 122 lead balls were effective both against troops in light cover, and to strip away camouflage and vegetation). Considered obsolete by some, light tanks had their uses; they could traverse muddy fields in which Shermans would bog down, or thread their way through trees and broken ground. TD platoons or companies might also be integrated into battalion and company formations; integrated formations could be quite complex and varied, depending on many factors. (Examples of formations are shown in Plates C and D.)

The squad and platoon

The halftrack was basically a means of transporting infantrymen rather than a combat vehicle; it would not be employed offensively alongside tanks with the infantrymen fighting from it. The manual *Crew Drill for Half-Track Vehicles* stated: "Small Arms Fire From Vehicle. – When rifle or carbine fire from the vehicle is desired, the squad leader halts the vehicle and specifies in the fire order the members of the squad who are to fire. Rifle or carbine fire from a moving vehicle is of little value." The halftrack's armor was too light, the open top far too vulnerable, and it could not always keep pace with tanks on difficult terrain under combat conditions. Like the dragoons of old,

Armored infantrymen, deployed in extended order, cross a clear area to search the forest on the far side. A halftrack to the right, beside a house, is prepared to give covering fire with its machine gun.

When the halftracks were left in the rear, armored infantrymen would frequently hitch rides aboard tanks. While it was recommended that no more than a squad ride on each tank, as can be seen this was often ignored; this particular scene is obviously in a relatively secure area.

armored infantry were transported into battle and then dismounted to fight. Most units dismounted when engaged, or when the accompanying armor was engaged and they moved up on foot to support the tanks. The halftracks could be left behind the nearest cover or concealment; some units seldom employed the mounted MGs for fire support, regarding them as defensive and AA weapons, but many units employed at least some of the halftracks to provide supporting MG fire for the dismounted infantry. On occasion the halftracks were maneuvered to fire on different enemy positions and advanced behind the infantry and tanks to provide continued support. They could also be employed to protect exposed flanks, the attacking unit's rear, and the supply line. In the defense halftracks were positioned as mobile firing platforms and provided a "base" for spare ammunition, rations, and gear; they were also sometimes used to evacuate casualties and prisoners.

The driver and one or two squad members remained with the halftrack to operate its machine gun(s), and other squad members often gave letters and personal items to their driver for safekeeping. Gunner duty was rotated to give men a break, and even lightly wounded, injured, or ill men drew this duty. An NCO was designated in charge of the platoon vehicles – the senior man present, the platoon sergeant, the mortar or MG squad leader, or a rifle squad leader or assistant simply needing a break. The nine squad riflemen were designated Nos. 1 though 9; the No. 4 was the bazooka gunner ("rocketeer") and No. 5 his loader, but all squad members were trained to operate the bazooka. If the bazooka was needed, then when dismounting the squad leader would order, "Rockets," and if not he would order, "No rockets," and Nos.4 and 5 would serve as riflemen. Nos. 6 and 7 were scouts, though this practice soon fell from use. If a halftrack MG was dismounted for ground use it was manned by riflemen No. 1 through 3 under the control of

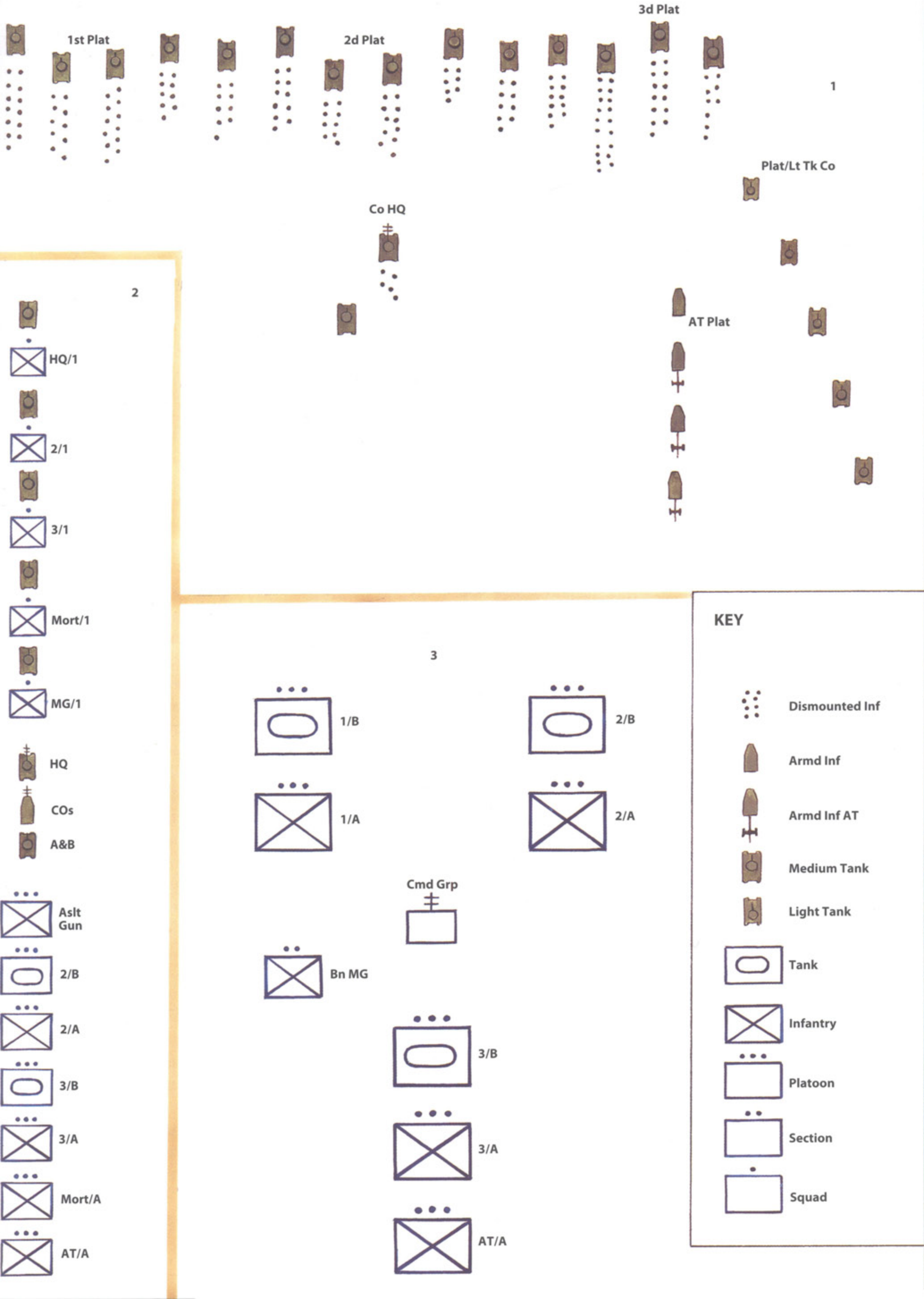
D FORMATIONS – MOUNTED ARMORED RIFLE & TANK COMPANIES

Armored rifle and tank companies typically operated together in combined formations, for all practical purposes as a single unit. The deployment of platoons depended on the tactical situation and terrain, although most units had more or less SOP formations when moving to contact on roads, advancing dispersed cross-country, or deployed in battle formation. The platoon symbols do not indicate a particular formation. That would depend on the tactical situation, terrain, and visibility, and platoons might assume different formations from one another. In these examples, the armored rifle company is Company A and the tank company is Company B. In one instance a light tank platoon from the tank battalion's Company D is attached, as is the AIB's battalion HMG section and/or assault gun platoon.

1: The armored rifle and tank companies are deployed in an attack formation on a wide frontage. The 3d Tank Platoon is short a tank. The infantry are dismounted, with squads following the tanks. The attached light tank platoon is deployed in echelon to protect the exposed right flank.

2: The column formation was used for the approach and even the movement-to-contact when engagement was likely. This is because most movement was accomplished on roads, and it allowed ease of control. Once engaged, the formation would deploy as necessary, based on the enemy's disposition, terrain, and obstacles. The lead rifle and tank platoons' squads and tanks are interspaced, followed by the two company HQs, while the other rifle platoons follow the tank platoons. The AIB's assault gun and 81 mm mortar platoons accompany the formation.

3: On each flank one tank platoon is forward in the inverted wedge formation, with the dismounted squads of a rifle platoon accompanying the tanks. A battalion HMG section follows the 1st Platoons on the left, to secure that flank and support by fire. The supporting platoons follow, prepared to deploy to either flank or relieve a platoon suffering losses.


1
1st Plat
2d Plat
3d Plat
Plat/Lt Tk Co
Co HQ
AT Plat
2
HQ/1
2/1
3/1
Mort/1
MG/1
HQ
COs
A&B
Aslt Gun
2/B
2/A
3/B
3/A
Mort/A
AT/A
3
1/B
2/B
1/A
2/A
Cmd Grp
Bn MG
3/B
3/A
AT/A
KEY
Dismounted Inf
Armd Inf
Armd Inf AT
Medium Tank
Light Tank
Tank
Infantry
Platoon
Section
Squad

76mm gun-armed Shermans spread out onto side streets as they reach an intersection. No infantrymen are apparent; this may be an instance when they are distancing themselves owing to frequent Panzerfaust or other AT fire. The infantry may be ahead of the tanks clearing likely firing positions.

the assistant squad leader. In the MG squad two riflemen were the bazooka crew if needed. An example of halftracks being left in the rear is provided by a 9th AIB (6th Armd Div) infantryman; it is apparent that the tanks were relied upon to neutralize enemy defenses:

> …from behind a hill, some of our tanks took up positions on the rear slope and began firing into the town. First one tank, then another, would crawl up to a point where the gun would clear the hilltop [hull defilade], fire at the target, back out of sight and another tank, a little further down the line, would roll up and do the same thing. When the tanks stopped firing, we, the armored infantry, left our halftracks behind the hill and went toward the town in a spread out formation. As we crossed a sugar beet field, we came upon an underground bunker which was flush with the surface and so well camouflaged, I almost fell into the entrance. There were Germans inside. A sergeant tried to get them to surrender, but they refused. We fired into the bunker, then entered to make sure of no further resistance.

How halftracks were deployed was sometimes not even standardized within units, and it was reported that even platoons within the same company might employ them differently, depending on the experience and preferences of unit leaders.

The advantages of each squad having its own vehicle went beyond merely being able to ride rather than walk. The squad was partly protected from weather even without erecting the canvas cover (this was done during administrative marches, but it could still be a cold ride in the winter.) Rather than rely on daily resupply from the company rear, armored infantry could carry a considerable amount of spare ammunition, rations, and water with them; they typically carried three days' worth, and held some in reserve in case the situation prevented timely resupply. They also carried a considerable amount of "comfort items," including one-burner stoves, gasoline lanterns, cooking gear, washpans, buckets, 5gal water cans, laundry items, souvenirs, and so forth. Each halftrack came with a 36x40ft camouflage net, an automotive tool kit, first-aid kit, D-handle shovel, pick-mattock, a 4½ft crosscut saw and a single-bit axe, which could be brought up when digging in to augment the men's small entrenching tools. So much extraneous gear was slung on the sides and carried on external stowage racks that halftracks took on the appearance of gipsy caravans. Armored infantrymen carried their bedrolls, augmented by liberated quilts, in the vehicles, so did not have to wait and hope for the company trains to bring them up, as did standard infantry. A canvas tarp could be draped over the passenger compartment, with the squad bundled up warm inside, or it could be attached to the vehicle's side and staked to the ground as a shelter. Squads pooled their K- and C-rations for cooking in their collection of pots and pans, and some men devised ways of heating C-ration cans on the engine manifold. The stowage in a vehicle also allowed them to make use of the popular 10-in-1 rations (three meals for ten men for one day).

An M3 surrounded by its squad. The infantrymen viewed their halftrack not as an armored fighting vehicle, but as a means of transport and a mobile home.

The squads had the benefit of the spare weapons stowed in their halftracks, with the option to use the MGs, bazookas and mines if needed. When dismounted the squad and platoon used basically the same movement formations as their standard infantry counterparts, but some modifications were required.[6] The 1st Squad was smaller than the 2d and 3d, and there were no BARs. Regardless of the dismounted formation (column, line, inverted wedge, wedge, echelon), the two-gun MG squad might be positioned to the rear to allow it to move into firing positions in the center or flanks, or the guns might be attached to specific rifle squads. Another option was for rifle squads to dismount a .30cal from their halftrack and use it on its tripod. The mortar squad was to the very rear, ready to provide support.

The realities of combat saw most squads drastically understrength, not just from combat casualties but from fatigue, illness, and non-battle injuries. One or two halftracks were typically "down," usually with mechanical problems. Losses were often heavy, with companies down to 40–50 men at times; platoons might field 20–30 men, with the MG squad being merged into the two or three small rifle squads. The mortar squad might remain or disappear; some units made little use of platoon mortars, and in some cases understrength MG and mortar squads were merged to use either weapon as needed. As an example, in ten months of combat a company of the 9th AIB lost 89 dead, 292 wounded, 19 missing or captured – losses almost approaching twice the company's TOE strength.

Missions: the rifle company

A rifle company might be paired with a tank company to fight as a team, or cross-attached to a tank battalion, which had probably attached one of its own companies to the AIB in exchange. While rifle platoons might be paired with tank platoons, the platoons of a single rifle company attached to a tank battalion were seldom separated to tank companies – this stretched the rifle platoons too far, and a company was more effective if its strength was concentrated. Nevertheless, there were circumstances in which a platoon

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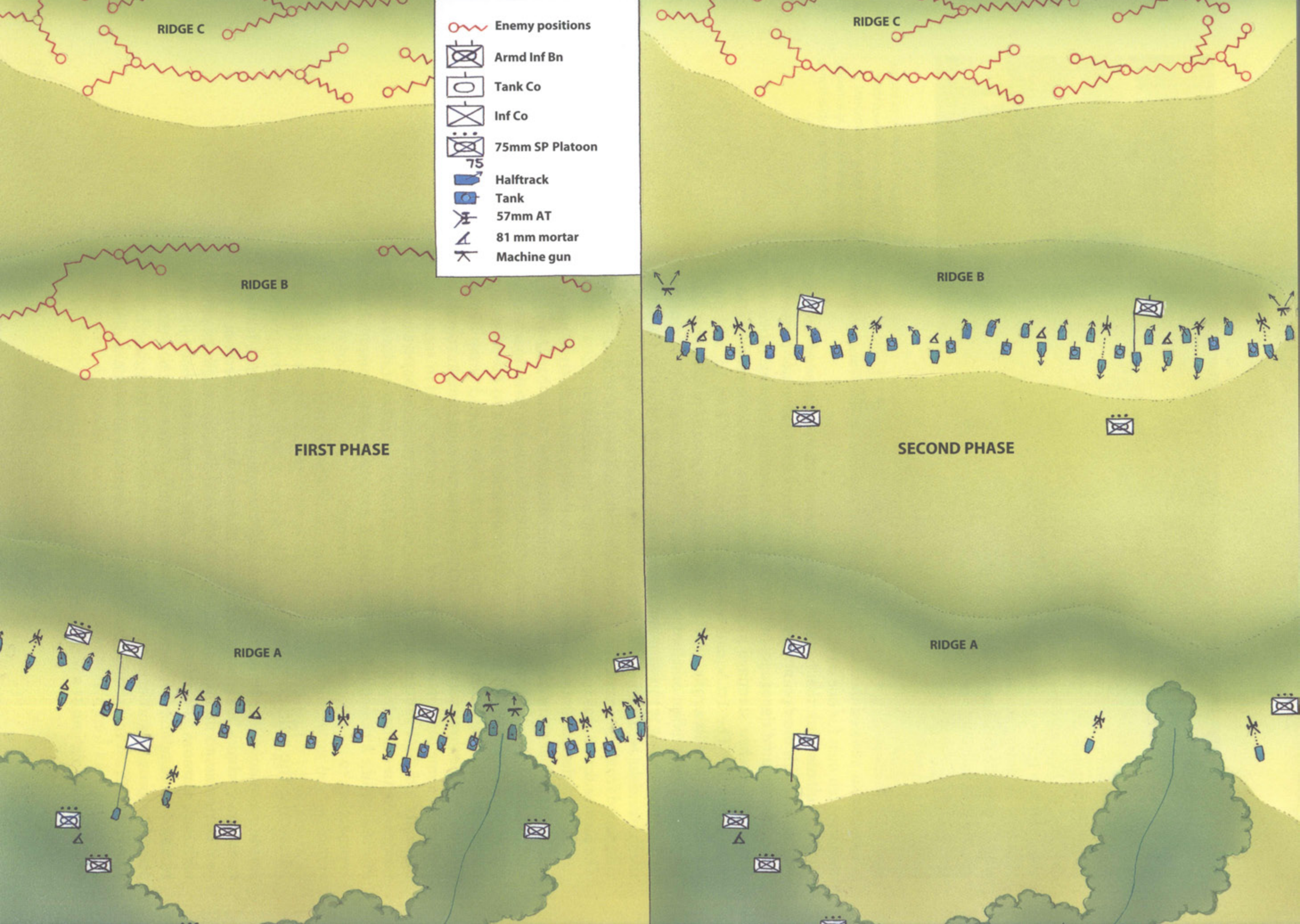
[6] See Ospey Elite 105: *World War II Infantry Tactics: Squad and Platoon.*


RIDGE C
Enemy positions
Armd Inf Bn
Tank Co
Inf Co
75mm SP Platoon
75
Halftrack
Tank
57mm AT
81 mm mortar
Machine gun
RIDGE B
FIRST PHASE
RIDGE A
RIDGE C
RIDGE B
SECOND PHASE
RIDGE A

attached to a tank company could be effective, especially if there was little threat from enemy infantry.

Most commonly the tanks would be forward and the infantry following mounted, dismounting when necessary to move forward to support or protect the armor. The AT platoon would follow to the rear. It might be employed with all three guns concentrated, but individual guns were more usually positioned to provide covering fire in overlapping sectors. In the defense all of the guns might be positioned in the main line of resistance, but some might be placed in the combat outpost line, covering gaps between units or exposed flanks.

The armored rifle company was capable of conducting a wide variety of missions, and often several of them simultaneously:

1. Following a tank attack to destroy remaining resistance.
2. Seizing and holding terrain gained by tanks.
3. Attacking to seize terrain from which tank attacks can be made.
4. Forming a base of fire in conjunction with AFA and TDs.
5. Attacking in conjunction with tanks.
6. Clearing minefield lanes, with or without engineer support.
7. Protecting tank units in bivouac, on the march, in assembly areas, and at rally points.
8. Assisting in forcing a river crossing.
9. Assisting in seizing a bridgehead.
10. Establishing or breaching obstacles.
11. Attacking or defending built-up areas.
12. Organizing and defending a position.
13. Performing reconnaissance and counter-reconnaissance.
14. Performing offensive or defensive operations as part of a battalion.
15. Taking limited objectives when strong enemy AT defenses made the use of tanks impractical.
16. Sending out raiding parties.
17. Performing security missions.

There were few attachments to the company from battalion apart from a medical team, with a halftrack ambulance, a litter team, and a couple of medics. The MG platoon could be attached to a company or a two-gun section to two companies. The guns might be positioned to provide overhead fire (least designed technique), to fire through gaps between units or cover exposed flanks.

When a defense was called for or the attack was paused to allow units to consolidate, reorganize, resupply, and rest before continuing the offensive,

E ARMORED INFANTRY BATTALION IN THE ATTACK

An illustrative problem, the attack of a position, was provided in FM 17-42, *Armored Infantry Battalion*, November 1944. While the manual was current with ongoing tactics, especially in regard to integration with tank units, this example demonstrates how the AIB's supporting weapons (assault guns, mortars, AT guns) were deployed in a two-phase assault to secure two ridgelines. Ridge "A" is occupied by the AIB, and the weapons are deployed to support the assault on Ridge "B", the intermediate objective. Once that objective is seized most of the supporting weapons are brought forward to support the follow-on attack on Ridge "C", the main objective. Note that some supporting weapons remain in their original positions, as they have the range to continue their support without re-deploying. Some of the company 57mm AT guns also remain in place to protect the rear of the advancing units. **(Key to subunit identities as per Plate D.)**

Two armored infantrymen wolf down a frontline Thanksgiving dinner complete with turkey. They wear the M1943 winter field uniform; note the TL-122 flashlight tucked in the left man's jacket opening.

then advanced units might have to pause to allow lagging units to catch up, resuming the advance only when the flanks were secure. Terrain, weather, enemy resistance, and lagging resupply could also force a halt, even if only temporary. The infantry would be the main defensive force, but the tanks and TDs would be in close proximity for fire and maneuver support, protecting the infantry as they dug in and established their fire plan. Part, if not most of the tank units would move forward into hasty defensive positions, hull defilade if possible or using whatever cover was available. They might be accompanied by infantry to protect them from close-in attacks, and would use their MGs and main guns to drive off counterattacks and curious patrols. Other tanks would remain behind the infantry, providing over-watching fires and serving as a reserve. Once the defense was prepared the tanks would withdraw behind the main infantry line; their accompanying infantry, or at least part of it, would remain forward manning screening outposts. The tanks, now protected by the infantry screen, would resupply, pull maintenance, and prepare to renew the attack.

Rifle companies typically defended with two platoons forward and the AT guns positioned among them covering tank avenues of approach. Battalion MG sections might be integrated into the defense, which could be reinforced with some halftrack machine guns. One rifle platoon would be to the rear; this was the "support" platoon and was not considered a "reserve." It was positioned to support the forward platoons by fire, and could maneuver to protect a flank or counterattack. It was this platoon that provided the outposts and local security patrols. If the AT guns were not needed to support the attack or defense, the dismounted AT platoon would operate as a small rifle platoon, with its three ten-man squads (each with three rifles, six carbines and one SMG) providing a valuable augmentation to the company.

The AIB

The mission of the AIB, and thus its subordinate elements, was oriented toward offensive operations *in conjunction* with tanks. The 1944 doctrine stated that: "The AIB in the attack makes full use of its mobility, firepower, and light armor protection from small arms fire"; but there is no mention of tanks, or of the fact that the infantry virtually always dismounted to fight, their mobility being employed simply to keep pace with the armor. In the offensive the AIB could be used in one of three broad ways: as an assault force, attacking on a predetermined front to seize designated objectives; as a support force, supporting the assault force (usually tanks) and consolidating its gains; and as a reserve, providing depth for the attack and flank and rear protection. The infantry would be coordinated with the tanks to fulfill the range of missions listed above for the armored rifle company.

The battalion operations order provided information on enemy and friendly troop dispositions; the battalion's mission, assembly area or other final approach-march destination; movement and attack phase lines, zone of advance, with frontages and movement directions for battalion elements, and movement formations; communications (call-signs, frequencies, signal

Fire support: an armored division had one or more tank destroyer battalions habitually attached to it, and they often fought alongside the armored infantry. Here, engineers prepare to demolish a knocked-out M10 with demolitions; severely damaged tanks and TDs were often blown apart to prevent the Germans from using them as pillboxes.

flare/smoke colors); route-of-march command post and vehicle control; missions for each element of the battalion; and logistical arrangements (ammunition, supply and fuel points, aid station, vehicle recovery, etc).

In the attack the halftracks were used to quickly move into attack positions where the infantry dismounted to fight on foot, usually in conjunction with tanks. Some vehicles – seldom all – were positioned for fire support, and the others withdrawn to a protected area. They might be concentrated at company or battalion levels in a group for easy control. Refueling and quick maintenance could be undertaken. They could be committed to action when required, moved to another position, or moved forward when needed.

Platoons or companies were not to be committed without coordinated fire support. Antitank guns, MGs, platoon and battalion mortars, assault guns, tanks, TDs, and 105mm SP howitzers were to deliver preparatory fires on objectives and known or suspected enemy positions, assembly areas, etc., and were prepared to shift fires to other targets as necessary.

The AIR

The tactical doctrine for the early armored infantry regiment specified that it could attack to drive-in hostile covering forces, to develop a situation, and to seize terrain from which to launch the tank attack. It could follow the tank attack closely to destroy remaining resistance, protect the division's flanks, occupy and hold captured ground, and cover the reorganization of the tank units by screening and outposts as they prepared to continue the advance. It was also used to secure bridgeheads, in which role it was assumed that the retreating enemy had destroyed bridges, which would halt the armor. The infantry would cross the river by fording, rubber boats and hastily erected footbridges; they would clear the far side, and establish a defense covered by artillery on the friendly side, while engineers erected/repaired bridges and set up ferries. This was a great deal for the regiment's two, or later three battalions to accomplish in support of the division's eight or even the post-1942 six tank battalions.

The three remaining AIRs that saw combat from 1943 were mainly administrative headquarters to control and support each's three AIBs, which were detailed out to CCs. The AIR headquarters itself might function as an HQ for a CCC or other task force.

Fire support

A pair of "married" armored infantry and tank battalions fielded considerable firepower: 53 medium and 17 light tanks, nine assault guns, six 81mm and nine 60mm mortars, and nine 57mm AT guns (if all were present and operational, which was seldom the case). Of course, only a percentage of these weapons could be directed at targets at any given time owing to their position in the formation, terrain restrictions, and the enemy's disposition. There were three other important means of fire support. The paired battalions had scores of mounted machine guns; these tend to be discounted by comparison with tank guns, mortars, and artillery, but in fact provided a very valuable source of fire support for offensive, defensive, and suppressive fire, and reconnaissance by fire.

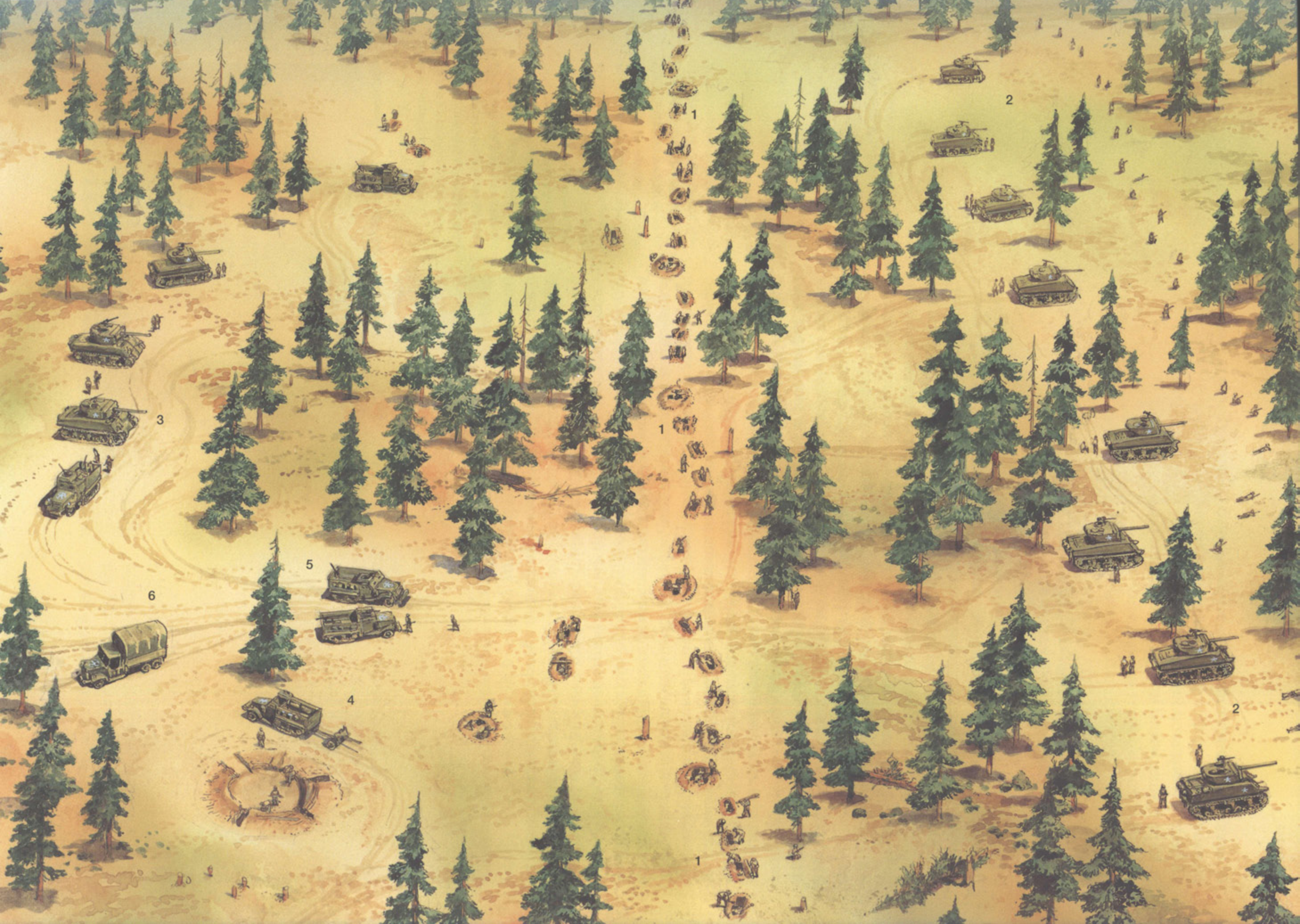
Armored field artillery battalions mostly remained directly under division control. Although specific battalions would be placed in direct support of a CC, the battalion would not necessarily accompany or even be in the immediate vicinity of the supported CC, and its fires could be shifted to support other CCs on order. The priority of fires for all divisional and any attached or supporting corps artillery might be given to the lead CC, split equally between the two forward CCs, or split with the bulk of the artillery assigned to support the main attack and the balance the supporting or secondary attack. Battalions or batteries might be attached directly to a CC, depending on the situation. Each AFA had three forward observer teams, one of which accompanied a CC's lead elements, typically riding in a dedicated tank or halftrack. When resistance was encountered during the CC's advance the FO would immediately call in the appropriate fire missions, and if timely these often neutralized or suppressed resistance before direct engagement was necessary. The artillery also fired on suspected or possible targets including to the flanks. The Germans were often stunned by the short time in which American artillery responded and by its accuracy, volume, and rate of fire; they called it *"automatische Artillerie."*

Besides destruction, neutralization, counterbattery, and harassing fires on point and area targets, artillery could also deliver screening smoke and, at

F

ARMORED INFANTRY COMPANY SUPPORTING A DEFENSE

While armor was envisioned to be the "arm of decision," welding its shock-power, firepower, and armored protection to mount unrelenting offensive, no armor unit could maintain a non-stop, continuous offensive operation. They had to rest, rearm, refuel, and refit; they might have to hold up while other units caught up, or phases of other operations were completed, or when terrain, weather, or the enemy situation delayed operations. Tank units could not effectively hold ground, although they could reinforce the infantry's defense. Infantry was essential to the defense; besides direct small-arms fire they provided local security patrols, outposts and listening posts, laid mines, emplaced obstacles, and conducted counterattacks. To protect the infantry while they dug in and readied the defense, tanks would screen the infantry, and they themselves were protected from close-in attacks. Here two platoons of an armored infantry company dig in and set up crew-served weapons (**1**); the support platoon protects the two forward screening tank platoons (**2**), while its machine guns and mortar crews dig in with the other rifle platoons further to the rear. The third tank platoon is held in reserve (**3**). A 57mm AT gun is being positioned (**4**), and some of the rifle company's halftracks and the service company's trucks have moved up to drop off ammunition and supplies (**5** & **6**). Both rifle and tank platoons are understrength.


1
2
3
1
5
6
4
2
1

Fire support: the armored infantry battalion possessed three 75mm M8 self-propelled howitzers in the assault gun platoon, each with a towed ammunition trailer that could be dropped at need. They could provide both indirect and direct fire support, but being open-topped and built on an M5 light tank chassis they lacked sufficient armor to function as true close-in assault guns, and were generally replaced late in the war by up-armored 105mm gun-armed Sherman tanks.

night, illumination. Smoke was valuable for screening friendly movements and blinding enemy observation, and if fired on maneuvering enemy units it would slow and confuse them and hamper their target acquisition and aim. Smoke rounds were available for the 105mm howitzer, 75/76mm and 105mm tank guns, 75mm howitzer, and 81mm and 60mm mortars, and many tanks had 2in smoke mortars.

Equally important was the air liaison officer, who rode further back in the column. Each advancing division was typically provided a certain number of on-call air strikes per day, from fighter-bombers that might be orbiting nearby to deliver their ordnance on call, or on standby alert at a forward airstrip. The P-47 Thunderbolts and P-51 Mustangs could attack targets with general-purpose bombs (usually 250 and 500lb), anti-personnel fragmentation bomblets, napalm fire bombs, 4.5/5in rockets, and .50cal machine guns. Fighter-bombers also ranged ahead of an advancing armored division attacking targets of opportunity, especially enemy armor, troop formations, artillery, flak, and supply convoys.

An AAA section, platoon, or battery of halftrack-mounted twin or quad .50cal MGs were often attached to AIBs or CCs, interspersed through columns to provide AA protection; the twin guns hammered out almost 1,000 rounds per minute. However, their real value was against ground targets, supporting the infantry advance by placing suppressive fire on woodlines, villages, and other areas harboring known or suspected enemy positions. One example of their use was by the 6th Armd Div near Metz, where engineers were working to reconstruct a bridge blown by the Germans, and infantry were unable to cross the river to clear the opposite shore. A towed 40mm gun was emplaced on a hillside and a "quad-50" halftrack pulled onto open ground near the bridge; the 40mm neutralized an MG position by achieving airbursts among the trees in which it was hidden, and the quad-50 sprayed the ridge, eliminating rifle fire and providing "touch-up" when snipers grew bold. Often two to six twin/quad-50s would work over a woodline or an objective village's outskirts even if no fire was received, and when the infantry moved in they often found chewed-up, abandoned positions. When fire was received, the "fifties" would hammer streams of tracers into the area, reporting that the enemy's fire ceased owing to a "personnel malfunction." (It is a groundless and irrational myth that it is illegal to fire .50cal MGs at personnel targets.)

PRACTICE: TANK-INFANTRY COORDINATION

In infantry divisions with nine infantry battalions, single tank and tank destroyer battalions were typically attached to support the infantry; by contrast, in an armored division the infantry usually supported the tanks, as they broke through enemy positions and attacked into the enemy's rear.

Armored infantrymen fight their way through a town alongside M4 tanks. Enemy fire could come from any direction, including the rear; time and manpower did not always allow every building to be cleared floor-by-floor. Typically, the tank/infantry task forces punched through towns eliminating resistance, and left it to follow-on reserve units to completely clear the area.

The infantry served to protect the tanks from close-in attacks, seized ground from which the tanks could attack, and established a base of fire to support the tank attack; they followed the tanks closely, assisting by fire, breaching AT obstacles, seizing the objective, mopping up, and protecting the tank unit's reorganization as it prepared to resume the attack. The infantry's supporting weapons assisted in destroying or neutralizing enemy AT and other supporting weapons. The tanks, in turn, supported the infantry attack with direct fire, destroying automatic weapons, neutralizing the objective until the infantry arrived, breaking up counterattacks and countering enemy reserves; they created paths through barbed wire, anti-personnel mines and other light obstacles, and neutralized enemy command, communications and logistics facilities.

Tanks also engaged enemy armor – irrespective of the questionable official doctrine that tank destroyers engaged tanks and tanks did not; if enemy tanks appeared, the tankers engaged them. Tank destroyers also supported infantry much like tanks; they were somewhat faster, less heavily armored and had semi-open-topped turrets, but otherwise they possessed much the same support capabilities as tanks.

Effective tank-infantry coordination began with joint training. No matter how well an armored infantry or tank unit had trained on its own and how proficient it was, if they did not train together in all aspects of their operations and at all echelons then their effectiveness would be limited, with a consequent cost in speed and lives. Habitual joint training allowed both infantrymen and tankers to learn one another's capabilities and limitations in regards to cross-country movement, maneuver, and weapons employment.

It might require two to three days of operating together in combat before they functioned smoothly. While battalions or elements of battalions could be assigned to

A rifle squad hugs an M4 tank to avoid sniper fire; note the Culin hedgerow-cutter mounted on the Sherman's bow, for tearing gaps through Normandy's banked hedgerows. Apart from the at-least-notional shelter provided by their bulk, there were two other reasons for infantrymen to follow close behind tanks. A Sherman had 16.5in-wide tracks (23in, on later versions); infantrymen would walk in the tread path to avoid antipersonnel mines, since the impervious tank tracks would have touched them off. Another reason to stay close during wintertime was the hot engine exhaust, welcome despite the noxious fumes. The left hand man carries a BAR; although these were not authorized for armored infantry until June 1945, some units had occasionally managed to obtain a few.

any combat command in a division, it was found that habitual pairing ensured combat effectiveness. If possible an armored infantry and tank battalion, along with their supporting artillery battalion, would be rotated to the reserve command together to maintain the association.

It was found that small tank-infantry teams fighting their way through enemy defenses were extremely effective, but this required the closest cooperation and mutual support, and sound training of each individual in his own and his unit's share of the job was stressed. Joint training to develop teamwork had to supplement technical training if missions were to be accomplished at minimum cost in lives and time.

Often infantrymen under training were given rides inside tanks; this made them appreciate the tanker's limited field of vision, and the closed-off feeling tankers experienced in "buttoned-up" tanks. Such an insight helped infantrymen understand the difficulty tankers had in detecting and engaging targets – including those supposedly marked for them by the infantry – and in selecting movement routes. It also increased the infantryman's confidence when facing enemy tanks, as he better understood their limitations.

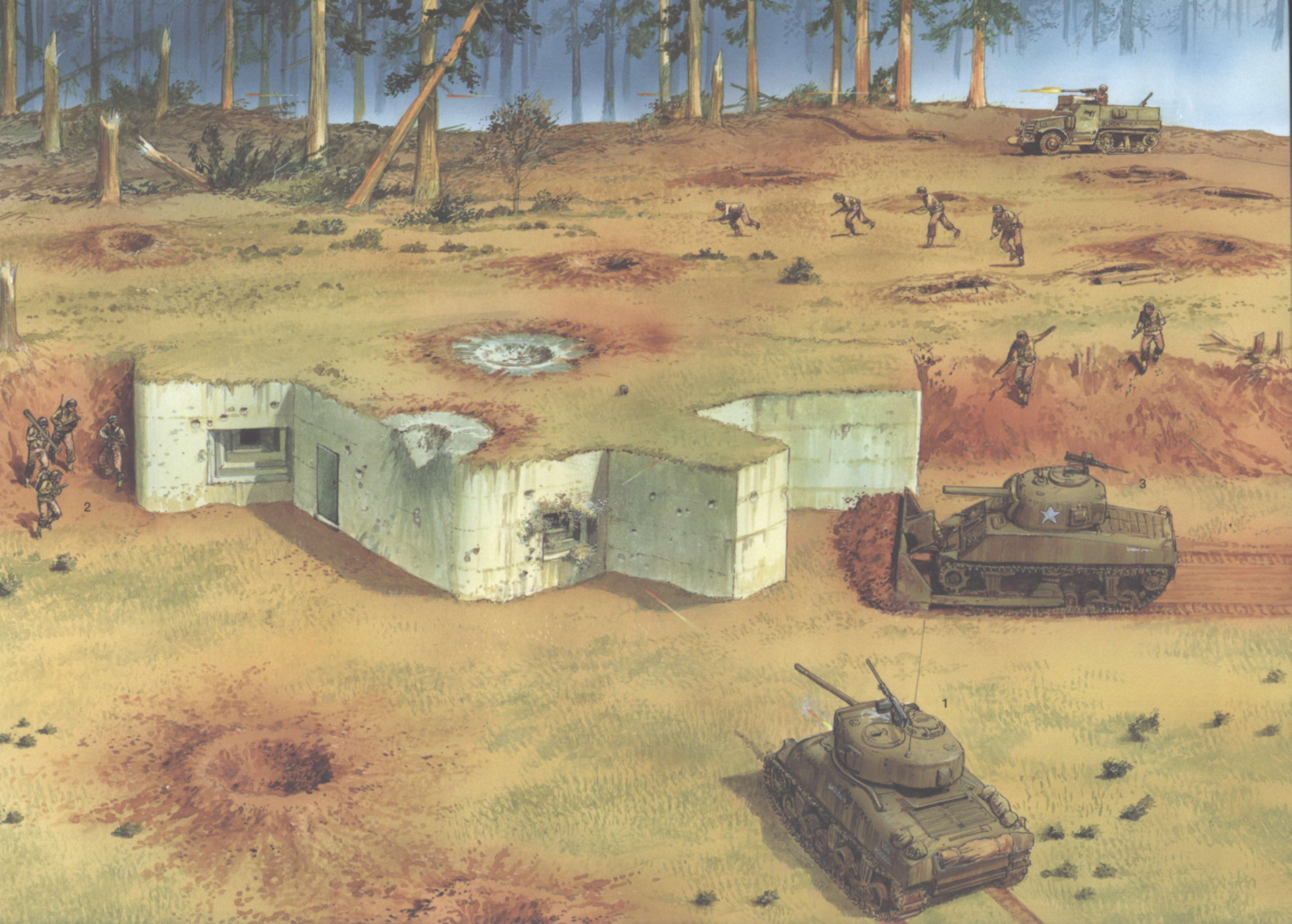
Mutual understanding of the limitations of infantry and tanks in negotiating different types of terrain was essential. In mud, rocks, dense trees and brush, broken ground, and rubbled built-up areas the infantry would have to carry the attack, with tanks providing supporting fires. On open terrain, clear roads and avenues of approach with limited manmade and natural obstacles the tanks charged on through, with the infantry keeping up to provide support when needed. Both needed to be able to recognize the situations in which one or the other should take the lead.

Close attention had to be paid by tankers and infantrymen to each others' situation. For example, the apparent inability of the tanks to effectively engage targets designated by the infantry might be due to excessive smoke and dust obscuring infantry tracer fire, flares, or marking-smoke. Conversely, if the tanks continued to advance and found that the infantry had lagged behind it might be due to MG positions overlooked by the tanks, or un-breached infantry obstacles. Rather than charging on ahead without infantry support, it was contingent on the tankers to determine the infantry's situation and

BREACHING THE "SIEGFRIED LINE"

The formidable "Seigfried Line" or *Westwall* was breached in September and October of 1944. Units developed their own procedures for defeating bunkers. Typically, two or three tanks would approach a bunker from different directions after it and the surrounding area was barraged by artillery, assault guns, and mortars. This served to drive the defenders into the bunker from the two- and three-man fighting positions scattered around it (these potentially offered more resistance than the bunker itself). Most of the original antitank guns had been removed from the bunkers during the course of the war, leaving them defended only by machine guns. While tank main guns and MGs fired into embrasures and suspected fighting positions (**1**), the infantry assault teams moved in with bazookas, satchel charges, and sometimes flamethrowers (**2**). The divisional armored engineer battalion possessed 18× M1A1 flamethrowers until November 1944, when these were withdrawn as they were so little used. Their disposition was left to the discretion of the theater commander; they were sometimes placed in storage, but other units retained them. Flamethrowers were operated by engineers or specially trained armored infantrymen. Often the simple demonstration of firing a flame burst within the embrasure's field of vision was all that was necessary to perusade the bunker's defenders to wave a white flag*. An even more successful tactic was the use of dozer-tanks, here a 105mm howitzer-armed M4A3 assault tank (**3**). The M1 blade, introduced in 1943, was designed for Shermans with VVSS suspension (shown here), and the M1A1 for the wider HVSS suspension. If the garrison refused to surrender, the dozer-tank would first plow earth into the embrasures, and then bury the exits – the occupants usually trotted out with *Hände hoch* before that final step. Engineers would place 500lb charges inside to collapse the bunker, preventing its reuse if recaptured during a counterattack.

(* For more detail on the use of flamethrowers, see Elite 160: *World War II Infantry Assault Tactics*.)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Armored infantrymen take potshots at suspected enemy positions in order to draw fire, in which case the tank's 76mm gun and MGs will come into play.

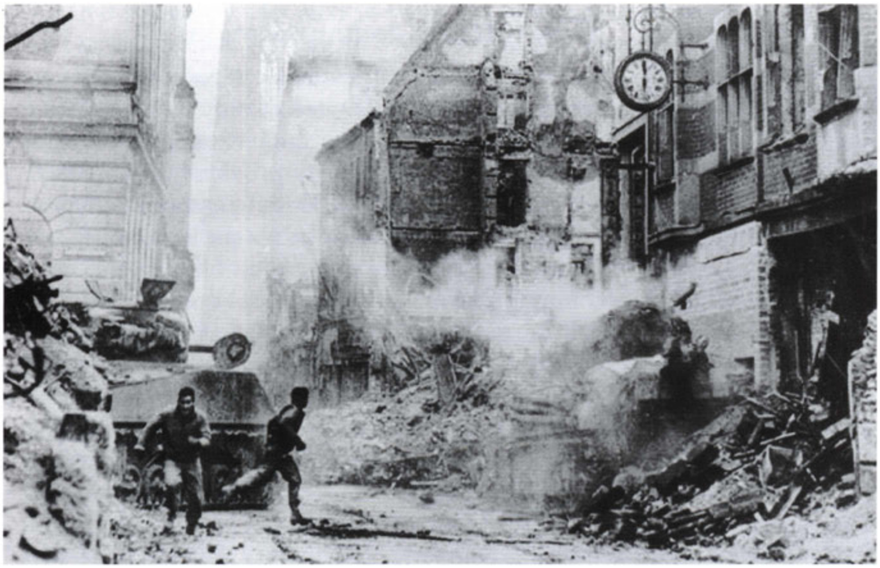
perhaps send an element back to aid them in resuming their advance.

The distance between infantry and tanks was not a constant, and depended on the roughness of the ground, density of vegetation, visibility (fog, rain, snow), the type and effectiveness of enemy fire, and obstacles. Infantrymen might hug the rear or side of a tank for protection from small-arms fire, but if tanks were receiving AT gun, artillery, or mortar fire the infantry would have to distance themselves, sometimes by a considerable margin. Small-arms and AT gun fire directed at tanks ricocheted, making them hazardous to infantry even 50 yards and more away. A common tactic was for the enemy to drive the infantry away from the tanks with machine-gun, mortar, and artillery fire (one tanker described the pinging sound of MG fire, and hearing the infantrymen "squealing like rabbits" when hit). Once the infantry were separated from the tanks the enemy's own infantry could move in with close-attack weapons such as Panzerfausts, Panzerschrecks, rifle grenades, hand-delivered shaped-charges and demolition charges.

Tank-infantry cooperation meant not only command and support coordination at company and battalion echelons, but the smallest details of teamwork in combat. At night the infantry would lead out with the tanks following, especially in woodland and brush. The tank platoon sergeant or leader would accompany the riflemen; when the tanks were needed he could quickly bring them up, knowing the location of the infantry and having had targets pointed out to him. This also reduced the chance of infantrymen being run over – a very real danger; there were numerous incidents in training and combat when tanks unknowingly ran through bivouac areas, with gruesome results.

As the tanks moved up, avoiding often-mined trails and roads if possible and led by the guides, the bow gunners covered the area to the left and the coaxial gunners the area to the right. They were prepared to machine-gun

Two armored infantrymen rush across a plowed field under fire, passing a knocked-out Panther tank. The GIs wear tanker jackets.



Crew survivors dash for cover from a disabled Sherman during street fighting; in such situations accompanying armored infantrymen gave them covering fire.

attacking infantry off of accompanying tanks – "back-scratching." Mine-removers followed just behind the infantry to clear tank routes, and the infantrymen checked clearings for AT positions on the edges. Two infantrymen rode on each tank, one a rifleman and the other manning the tank's turret-mounted AA machine gun; both carried grenades and used the turret for protection.

Small-arms tracer fire often proved unsatisfactory for designating targets to tanks since there was too much of it flying about; the US used red tracers, and German tracers first burned red then pale green, or vice versa. Red and violet smoke hand grenades were generally used to mark targets, though since they generated too much smoke and could obscure the target for the tankers often half of the smoke compound was removed. Smoke hand grenades fitted to rifle grenade adapters were pre-ignited so that they would leave a smoke trail to the target, and smoke streamer rifle grenades were later introduced. When tanks moved forward to support the infantry, an infantry leader directing the tanks would signal his location by placing his helmet on the raised muzzle of his weapon to attract the tank commander's attention; the platoon leader's tank would move in that direction so they could make contact.

Even though the infantry were provided halftracks, these often remained in the rear and the infantry would mount tanks. Typically, a squad would ride on one tank; they were cautioned to watch for low branches and telephone/power lines, not to smoke owing to the fire hazard, and not to hang onto other riders but only to the tank itself. The tank-riders had to be ready to avoid the traversing turret and be prepared to dismount immediately if fired upon. The tank commander could order them to dismount at any time, and only he could allow them to mount. The infantry leader was responsible for ensuring tactical integrity and organizing the troops to go into immediate action when dismounting. The infantry would dismount to clear obstacles and debris, conduct reconnaissance, rout out snipers, and ground-guide tanks when necessary, and would spread out to provide security at any halt.

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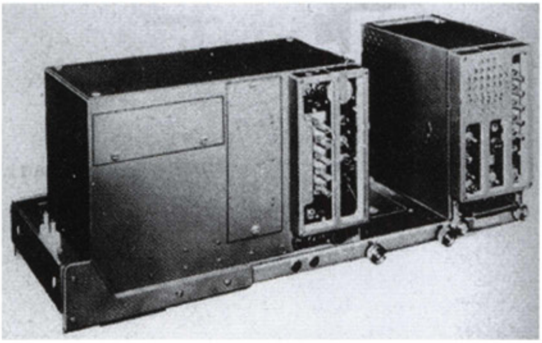
[7] Colored smoke grenades were not available until late 1943. The M16 came in red, yellow, green, violet, orange, blue, and black; the M18, in the first four colors only, generated more vivid and denser smoke.



Communications: an SCR-528 radio had one transmitter and one receiver. It was similar to the SCR-508, which differed by having two receivers (the smaller set to the right), enabling it to simultaneously monitor the frequencies of a commander's own subunits and that of his higher commander. These radios had a range of approximately 10 miles.

Tank-infantry communications

Colored smoke grenades, flares, tracers, and arm-and-hand signals were of only limited value for communicating between tankers and infantrymen.[7] Halftracks and tanks were provided an M-238 flag set (red, yellow, green). Voice communications was impossible other than by radio and telephone.

At company and platoon levels radio communication was possible between tanks and halftracks. The problem was that the halftracks were usually in the rear, and the armored infantry had no man-portable radios capable of talking to tank radios. Man-portable radios were not authorized for AI units at all until November 1944, and these could not communicate or "net" with vehicle-mounted radios and were strictly used for communicating between ground troops. These sets were mostly issued in December 1944 and January 1945; one backpacked SRC-300 "walkie-talkie" FM radio was authorized for the company HQ, and a SCR-511 "pogo-stick" radio might be substituted if the "300" was not available. These were for communications with battalion. The company CO and each platoon leader was authorized a SCR-536 "handie-talkie" used only for internal company communications, and this small handheld AM radio could not net with the "300." In order to communicate with the infantry's SCR-536s, another was mounted in each platoon leader's tank. A bolt was removed from the commander's hatch rim providing a hole for the antenna, and a short piece of rubber hose was placed around the aerial to keep it from grounding. The radio was modified so that the tank commander could use a throat microphone and operate the switch with an improvised extension.

Rifle platoon leaders' halftracks were equipped with an SCR-510 radio and the company commander's with an SCR-528 (mounting a radio meant the loss of two troop seats). The tank company commander had an SCR-508, his platoon commanders SCR-528s, and the individual tanks SCR-538s. The SCR-508 and 510 had a frequency range of 20-29.9 Megacycles (Mc) and the SCR-528 and 538 had 20-28 Mc; this meant that all of these radios could net, but this had to be finely coordinated between the two battalions at all echelons, along with assigning fire-support and administrative net frequencies. These were all frequency-modulated (FM) radios, which were

Leaving a village smouldering after passing through it, an M3A2 halftrack advances across the fields. Halftracks were sometimes brought up to transport the infantry across open ground exposed to long-range machine gun and mortar fire.

pioneered by the US as a tactical radio because they operated more reliably than amplitude-modulated (AM) radios used by most armies. AM radios encountered difficulties when mounted in vehicles and generated more static.

A means was needed to enable accompanying infantrymen to voice-communicate with tanks, and an effective method was to place an EE-8 field telephone inside the turret with a flashlight fixed next to it. A 20ft length of four-strand electrical cord was run to the rear of the tank and an EE-8 handset fitted, the handset switch being modified so it could trigger the flashlight inside the turret, alerting the tank commander of a call. Often the infantry commander simply carried the handset rather than leaving it attached to the tank, where it could be damaged by fire. Some units mounted the handset with an extension cord inside a .50cal ammunition can welded to the tank's rear. Another method was to drag an up-to-100ft length of telephone wire behind the tank, so the following infantry commander could attach an EE-8 handset or TS-10 sound-powered phone to the wire when necessary. These additions were not fitted on all tanks, but on platoon and company commanders'.

UNITS IN ACTION

Dismounted company action without armor

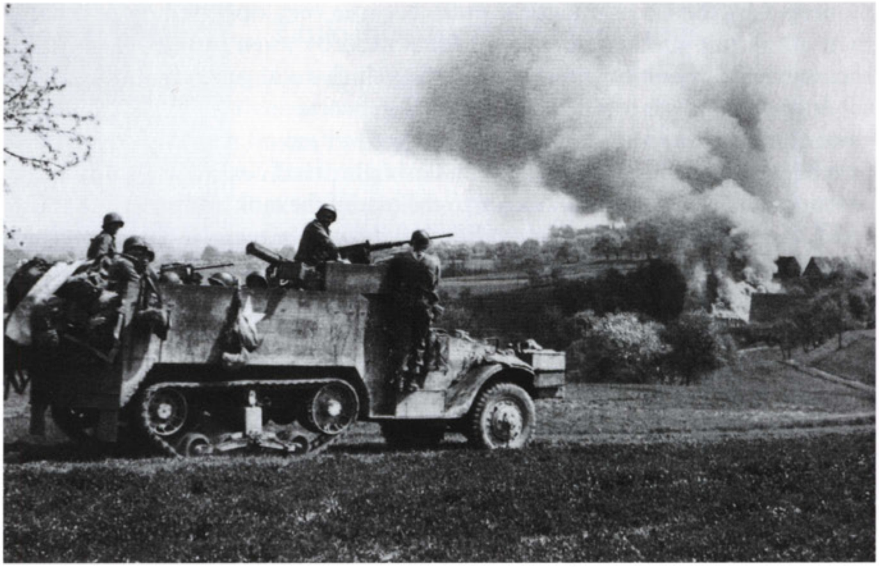
In mid-January 1945, CCA of the 12th Armd Div was tasked to clear an enemy bridgehead in the Weyersheim-Gambsheim-Offendorf-Herrlisheim area of northeast France near the German frontier. This was a rare instance in which an AIB fought on its own without armor, other than a single platoon. The focus will be on Company C, 66th AIB.

The 66th AIB mounted out at 1am from villages where it had bivouacked, and had undertaken training in preparation for the operation. The companies were at near full strength. The battalion approached its assembly area at Hoerdt aboard 75 halftracks, in the order Co C, HHC, Co A, and Co B. In the assembly area at 3.15am they dismounted and were briefed. Company B would be in reserve, Co A to the left and Co C to the right, and the battalion's assault guns and mortars were set up in the rear. The objective was the Steinwald, a small forested area; Co A would clear the woodland to the north of an east-west road running through it, and Co C the south side. An estimated 160 Germans were in the woods, along with six armored vehicles. Once the forest was cleared the battalion would assemble and, on order, proceed to Offendorf for the Rhine River crossings to the southeast.

All companies departed Hoerdt at 3.45am on foot in the order of Co C, Co A, HHC, and Co B; they followed the north side of the Derivation Canal, under cover of its raised bank. The companies' AT guns were left in the assembly area, the AT platoons serving as rifle platoons. They reached the

Table 14: Task organization, CCA, 12th Armd Div

CCA Troops	TF 1	TF 2	TF 3
HHC, CCA	43 Tank Bn (–)	66 AIB	17 AIB (–)
C, 119 Engr Bn	A, 119 Engr Bn	1-B, 43 Tank Bn	D, 43 Tank Bn
A,134 Maint Bn	1-B, 92 Recon Sqn		
C, 572 AAA Bn			



This M3A1, its back festooned with the squad's gear along with an air-ground recognition panel, mounts three machine guns: (left to right) .30cal M1919A4, water-cooled .30cal M1917A1, and .50cal M2. Ration boxes are stacked and tied on the front bumper.

Landgraben Canal at 4.45am, and Co B dug in along it with HHC. The engineers were completing four footbridges over the canal, and Cos A and C quietly crossed at 5.15am in single file, each using two bridges and being guided by blinker lights to their rear, which they kept aligned. The support platoon was 150 yards behind the lead platoons, protecting the flank. A frozen drainage ditch 4ft deep, oriented SW to NE, was the boundary between the two companies; the line of departure ran perpendicular to the southwest end of the ditch.

This is when problems began to develop. There was no identifiable terrain feature for the line of departure, and in the darkness and fog visibility across the snow-covered ground was only about 20 feet. Two outposted Germans were captured without firing; but as Co C advanced on the right they discovered that they were on the NW side of the drainage ditch in the Co A zone, further to the left than intended. The platoons were still in column formation, and the company CO was conferring with the platoon leaders while the troops rested, when four MGs opened fire from ahead and the right flank, catching the platoons in the open. Pinned down with no cover and the sun rising, the company CO had no choice but to signal the attack.

He and the first men to rise were cut down; Co C managed to set up an LMG and an HMG, but both were knocked out within 10 minutes. German mortars began barraging the company, especially the support platoon to the rear. Men were crawling back to a frozen stream on which Co A men were also falling back under heavy fire; there at least one man out of every three was wounded, and all Co C officers were dead. The AT platoon, which had been following further to the rear, moved into the stream bed for cover. Battalion could not be raised on the radio; five P-47s bombed and strafed the Steinwald, but the ordnance struck the forest's center, sparing the Germans dug-in on the edges. The 1st and 2d Platoons of Co C were virtually wiped out by MG, mortar, and sniper fire, and 3d Platoon attached itself to Co A. One man managed to make it to the rear with the German prisoners, who helped carry two wounded. He was ordered to return with an ammunition truck, but encountered more troops drifting to the rear and, told that it was pointless, he returned with the truck.

Company A fell back with heavy losses, and the remnants of both companies dug in on the Landgraben Canal at 1.00pm with a tank platoon in support; the battalion's assault guns and mortars had not fired in support due to a communications failure. The 70 remaining men of both companies were sent back to Hoerdt for rest, but they returned to the canal and resumed the defensive positions the next afternoon, where they remained until the 19th.

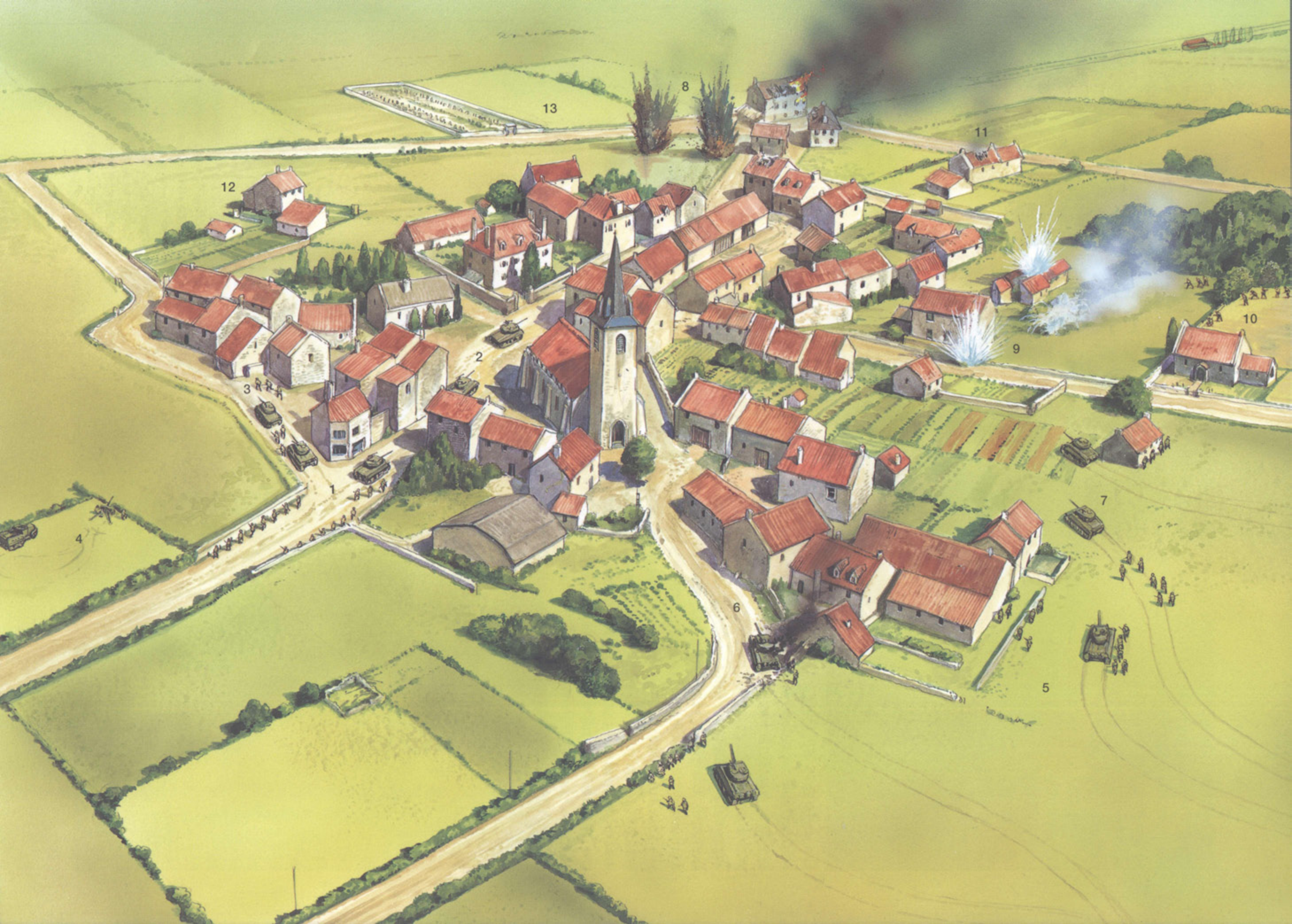
The attack was a failure, but the benefit of studying this particular action is that it demonstrates the importance of employing supporting weapons and armor: it could have resulted in success if even a small number of tanks had been employed and better use made of assault guns and mortars. The platoons pinned down in the open had no effective means of returning fire other than small arms; direct-fire weapons capable of suppressing the woodline should have been positioned to support the companies. Communications were inadequate: no field telephones lines were laid by the advancing companies, which relied upon only one radio.

Tank-infantry team clearing a town

On February 4, 1945, CCA of the 12th Armd Div was still in action in northeast France, pushing toward the German frontier near Colmar. The heavy losses suffered earlier by the 66th AIB had been made good. TF Doc was composed of the 66th AIB (less Co C); Co A, 43d Tank Bn; 1st Platoon, Troop A, 92d Cavalry Recon Sqn; and 1st Platoon, Co A, 119th Armored Engineer Battalion. The tank platoons each had four 75mm-gun Shermans and one 105mm Sherman assault gun.

This force was assigned two objectives. The town of Obermorschwihr was to be taken by Co A, 66th AIB, with the battalion's assault gun platoon and an 81mm mortar section. Hattstatt to the southwest would be secured by Co B, 66th AIB and Co A, 43d Tank Bn, under the command of the former's

With visibility cut off by the thick, churning smoke from a burning building, infantrymen double-time down a village street to clear it of any Panzerfaust-armed Germans lying in ambush. The tank commander is covering them as best he can with the .50cal machine gun.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CO. The Germans were conducting a delaying action but their defenses were weak. The battalion CO took his company COs to a site where they could observe the terrain and their routes, and the units moved up to that point and picked up their COs at 3pm. The infantry were mounted in halftracks, and TF Doc moved out in the order Co B, 66th AIB; Co A, 43d Tank Bn; Co A, 66th, and HHC, 66th. At 4pm A-66 pulled out of the column to advance southwestards on Obermorschwihr, and the rest of the force continued on to Hattstatt.

The HHC set up its assault guns and mortars on a ridge overlooking Obermorschwihr, where a single OP had an excellent view to support both attacks. The infantry halftracks at first preceded the tank company, but outside Hattstatt the Shermans took the lead except for two halftracks on the point. The rest of the company pulled over, and the squads dismounted to move on foot on either side of the road to avoid being seen from the town. Before advancing the CO called the platoon leaders for a final briefing. German 10.5cm artillery began impacting to the rear, but none landed among the units. At 4.40pm infantrymen who had gone to the top of a hill to observe the town captured 20 German defenders without resistance.

At 5pm the advance was signaled, moving basically east to west. 1st Platoon of B-66 moved along both sides of the road with the 1st Tank Platoon following at 50 yards; the paired-off 2d and 3d rifle and tank platoons followed in sequence, the tank platoons in a pair of staggered columns. Rounding the bend leading into town, they received some fire from foxholes to the right of the road; the tanks machine-gunned the area and Germans started coming out of the woods to surrender, but the Americans ignored them and kept advancing. The 1st Tank Platoon's assault gun halted and was immediately hit by multiple AT rounds; the burning Sherman blocked the road, but the 2d Tank Platoon opened fire while the Germans continued to fire on them. The 2d Platoon infantrymen took cover in the ditches and were unscathed. Two more tanks were hit, with one crewman killed in each, and at least one of the estimated three German AT guns was knocked out.

In the meantime, urged on by the CO of B-66, the 1st rifle and tank platoons continued the advance. They fired at detected and suspected enemy positions, and the artillery FO directed howitzer fire from the supporting 493d AFA Bn into the area where the AT guns were firing on the stalled tanks, followed by smoke to blind the Germans. This allowed the three remaining tanks to rush through followed by the 3d Tank Platoon, its assault gun also firing smoke to screen the four tanks; the rifle platoons followed.

TANK AND ARMORED RIFLE COMPANIES SEIZE A VILLAGE

A dismounted rifle company with a tank company attacks into a French village. The 1st Rifle and 1st Tank platoons (**1**) attack on the main road and into the town square (**2**); the tank platoon's light section has split off onto the road to the left (**3**). A 57mm AT gun (**4**) has been positioned to cover the outer buildings on the left. The 2d Rifle and 2d Tank platoons are attacking from the right flank (**5**). The lead tank was knocked out after crashing a stone wall (**6**) on its way toward the platoons' objective, the church; another tank covers the evacuation of the crew, while the rest of the platoon redirects further to the right flank (**7**). Buildings on the far side of the village burn from 105mm SP howitzer fire (**8**), and the battalion 81mm Mortar Platoon fires WP smoke into the village's right flank buildings (**9**) to cover the infiltration of the 3d Rifle Platoon moving in from the trees to the right (**10**). The plan is for the two 1st Platoons to fight their way through the village to the far side (**11**), to link up with the 3d Rifle Platoon and prepare to defend against any counterattack. The two 2d Platoons will clean the rest of the village as the remainder of the Antitank Platoon moves up to reinforce the 1st and 3d Platoons. A battalion heavy machine gun section (not yet arrived) and the AT gun at (**4**) will secure the left flank (**12**), covering the road passing the cemetery (**13**).

An armored infantry unit passes through a German town. Note the add-on equipment rack on the rear of the jeep, of which each AIB had 24 (some units called them "peeps").

At an intersection outside of the town two MGs opened fire on the 1st Rifle Platoon, wounding two men, but were quickly silenced by the lead tank. The B-66 CO placed the MG section (from battalion) and a 2d Platoon squad at the intersection to keep fire on the enemy position to the southwest; the rest of 2d Platoon was dispatched to protect the north flank. The 1st Rifle Platoon continued on into town, followed by the 3d some 150 yards behind, but one squad was detached to reinforce the 2d Platoon squad at the intersection (it should be noted that this kind of flexibility – cross-attaching squads between platoons – is essential for successful operations). The point squad ran into a stout log roadblock inside the town; this was not mined, but blocked the advance. One of the squad was hit by a sniper as they pulled back. As a tank rolled up and blasted HE rounds into the roadblock the riflemen fired on the sniper and threw grenades.

With the roadblock shattered, the tank rammed through it and the 1st Rifle Platoon followed, searching for snipers and AT guns and MGs hidden in alleys. The riflemen advanced 25 yards down both sides of the road ahead of the tank, which covered them with machine guns; once a stretch had been cleared they would return to the tank for cover and close-in protection as it moved up, and the process was repeated – it was slow, but effective. Upon reaching the town center a tank accompanied by a rifle squad went around each side of the square checking the side streets. The second tank then followed the first down the main street. On the far west side of the town a second log roadblock was breached in the same manner as the first.

While the 1st rifle and tank platoons were working across the town center, the 2d Platoon (–) moved around the north side of the town meeting no opposition. When all elements reached the west side of the town the B-66 CO deployed them to establish a perimeter around it: 1st Platoon on the west side, 2d on the north, and 3d on the south. The married tank platoons co-located with the rifle platoons, except that part of the 3d Tank Platoon was stationed on the east side. Patrols were dispatched to make contact with adjacent platoons. A dismounted AT Platoon squad secured the east side, releasing the 2d Platoon squad and MG section to reinforce the west side. The other two AT squads set up in buildings inside the town to cover the western approaches. It was dark, and the troops would not start searching houses for diehard defenders until daylight. Nonetheless, several stragglers were found, who reported that they had been left behind to construct roadblocks while most of the other defenders withdrew to hills to the west.

By 11pm the town was ringed by infantry and 14 tanks. There were still Germans inside, so the infantrymen and tankers were prepared to deal with any efforts to escape as well as attacks or reinforcement attempts from the outside. The artillery FO in his observation post to the north was contacted on the company radio, and relayed the fire plan to his battalion. Preplanned fires were plotted around the north, west, and south sides, plus fires from the 66th AIB's own mortars and assault guns. With the firing dying away, joyous French inhabitants began emerging from basements to greet their liberators.

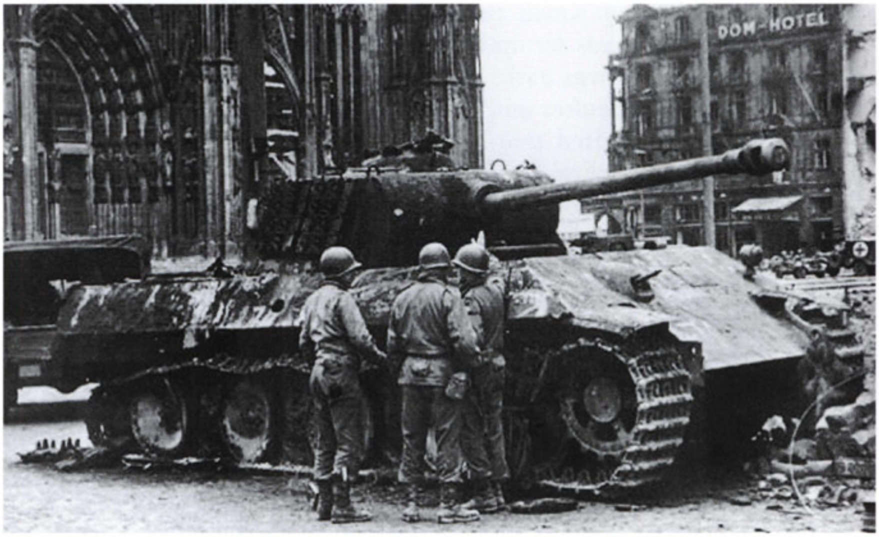
This was a well executed operation in which the armored infantry used their halftracks to approach close to their objective. Three tanks were lost on the approach, but resistance inside the town was light. Close coordination between infantry and tank platoon leaders was effective; the operation was coordinated with the artillery, and observers were in place. The battalion's supporting weapons were integrated, to include attaching a battalion MG section to the rifle company. The rifle and tank platoons worked very closely in mutual support, effectively breaching obstacles and clearing the main street of threats. An effective defense backed by a solid fire support plan was established, even though night had fallen (establishing a defense in the dark, especially in a built-up area, is a challenge). This action provides a good example of the benefits and capabilities of truly combined-arms operations.

ASSESSMENTS & CONCLUSIONS

A 1946 assessment of armor forces by the Army Ground Force found that "The basic doctrines of the Armored Force have changed very little since 1940, but there have been many changes in technique. Maneuverability and gunnery became more essential to success as antitank weapons developed, and the principles of the combined arms and fire and movement were strongly emphasized as a result of combat experience. The combat experience of the British and American armored units had a sobering effect upon the theories of invincibility which some leaders held. They began to appreciate that tanks were not all-powerful and invulnerable, that armored tactics could not be based upon the assumption that tanks could force their way through a well organized defense." The General Board of the US Forces, European Theater determined that the tank-to-infantry ratio was usually unbalanced:

> Analysis indicates that in many of the operations in which the main effort was entrusted to armor, infantry was attached on the usual scale of one [standard] regiment per armored division. These attachments were much more frequent in the case of the heavy armored divisions for the obvious reason that while there is parity at battalion level between infantry and tanks in the light division, a one-to-two ratio exists in the heavy unit. Even the light divisions, although successful in exploitation and pursuit without attached infantry, required additional dismounted strength when employed on secondary missions. It can be

Armored infantrymen examine a knocked-out and burned-out Panther PzKpfw V. Formidably armored from the front, it had comparatively thin side armor; what appears to be a 75mm penetration hole can be seen to the left of the leftmost man.



> stated that combat experience has definitely shown the need for at least parity between infantry and tank units in an armored division. Consensus of field commanders is that the ratio of infantry to tank units at company level should be three to two.

Ideally, a fourth AIB would have been added to provide more flexibility. Effective infantry firepower was found essential for successful armor operations. It was often found after tanks were sent in that the objective was occupied by more AT weapons and obstacles than expected; the infantry would have to pass through the halted tanks and assault the objective through close combat. Once the objective was reasonably secure the tanks would move forward.

On other occasions the infantry would be in defensive positions and the tanks launched their attack through them, the infantry then following. This did not always allow effective coordination before the attack was launched; it was more effective for the tanks and infantry accompanying the attack to link up and coordinate in the assembly area before executing the attack.

Armor doctrine was basically solid, but tactics, techniques and organizational factors were greatly refined in just about all areas; the 1944 manuals were soon replaced by more practical editions, and this improved body of knowledge continued to serve the US Army for many years. The armored infantry organization, weapons, equipment, and tactics were proven viable after almost a year of intense combat in Northwest Europe. The mobile, self-contained battalions were considered quite effective, but the major deficiency was the halftrack. It offered only moderate cross-country capabilities, could not keep up with tanks in many types of terrain, lacked adequate armor protection, and the open top greatly endangered the passengers. A full-tracked armored personnel carrier with overhead protection, and ideally an amphibious capability, was desired; even though accompanying tanks were not amphibious, amphibious personnel carriers would allow the infantry to cross water obstacles to secure the far side, establish a bridgehead, and allow engineers to construct bridges and operate ferries.

The basic World War II armored division organization proved to be an effective formation and, with upgrading, it endured for almost another 20 years. The three CCs became co-equal maneuver forces, although the third was still referred to as CCR until redesignated CCC in 1954. From 1949 there were four of each tank and armored rifle battalions, with four line companies, but now reduced in strength. The fourth tank battalion was equipped with heavy tanks and had only three companies, the other battalions having medium tanks. The infantry-to-tank ratio was improved, with 16 rifle and 15 tank companies (12 medium, three heavy). The battalion headquarters and service companies were combined. Tank destroyer battalions were disbanded since the heavy tank battalion took over their function, and an AA battalion was made organic to the division. Rifle squads were reduced in size and organized the same as standard infantry, but retained the additional driver; issue of a squad BAR was finally approved in June 1945, recognizing its necessity with squads fighting dismounted. Service support units were much increased in size and capabilities. Post-war AIBs still had World War II halftracks, only partly replaced by the interim M44 and M75 armored utility vehicles. They began to be replaced by full-tracked, amphibious M59 armored personnel carriers in 1954, and by M113 APCs in 1960. True combined-arms units were finally achieved in 2005, when the distinction between mechanized and tank battalions was removed (other than traditional branch designations being retained). Today's Modular Force combined-arms battalions consist of two rifle companies equipped with Bradley M2-series infantry fighting vehicles and two Abrams M1-series tank companies.

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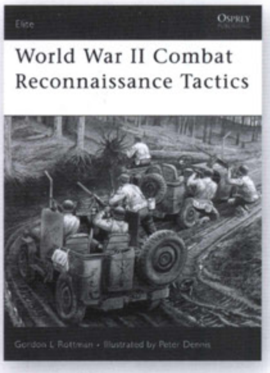
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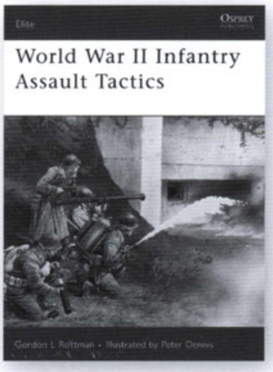
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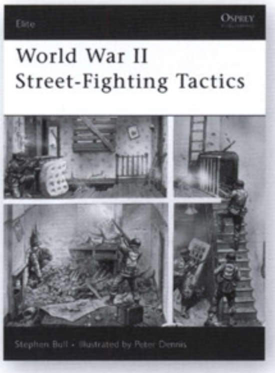
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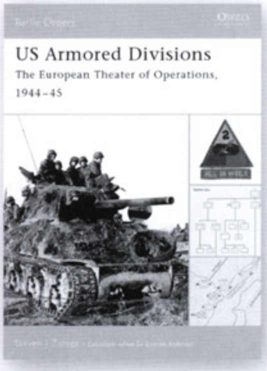
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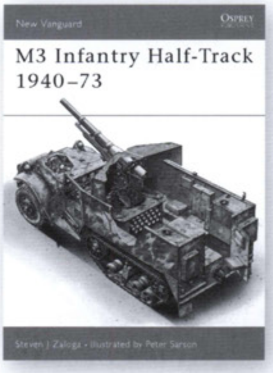
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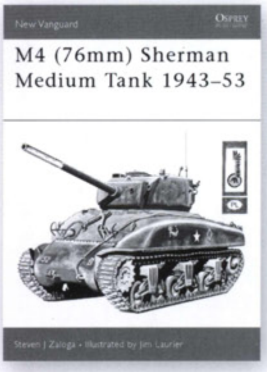
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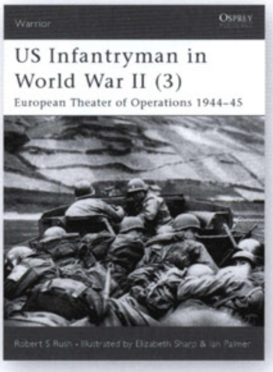
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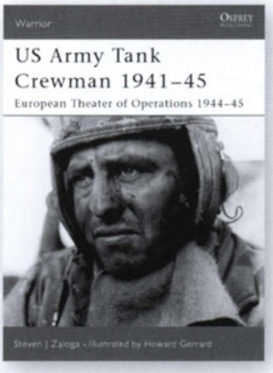
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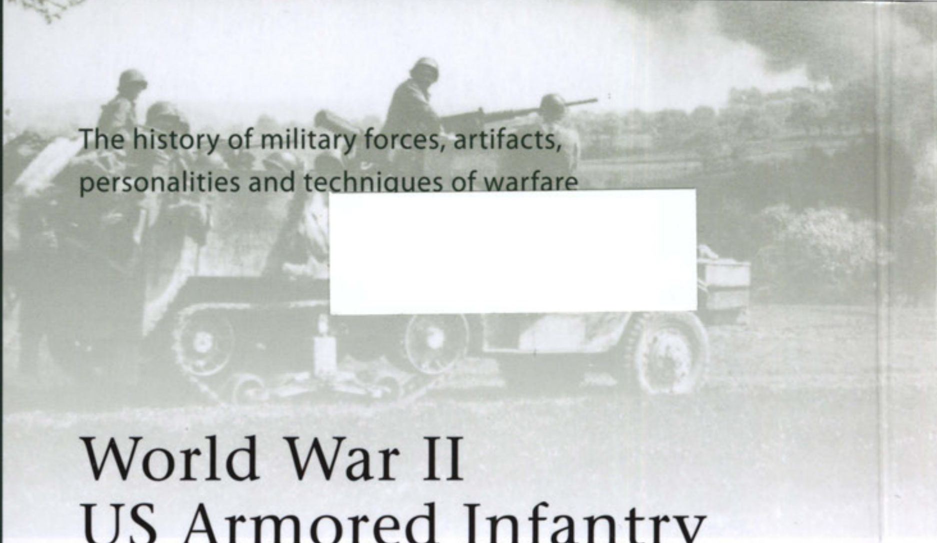

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